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An Experimental Study of the Self in Psychology

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PUBLISHED FOR THE AMERICAN PSYCHOLOGICAL ASSOCIATION

By THE PSYCHOLOGICAL REVIEW COMPANY

PRINCETON, N. J.

AND ALBANY, N. Y.

AGENTS: G. E. STECHERT & CO., LONDON (2 Star Yard, Carey St., W. C.)
LEIPZIG (Hospital St., 10); PARIS (76, rue de Rennes)

*With grateful acknowledgment of Professor
Calkins's painstaking and scholarly work,
which first interested me in the problem of the
self in psychology, and of Professor Boring's
frequent advice and encouragement.*

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HISTORICAL INTRODUCTION

The great divergence of opinion among psychologists as to whether we are or are not conscious of ourselves, and the contradictory reports of those psychologists, who admit that we are conscious of ourselves, upon the nature of such self-consciousness and upon the practicability of making such consciousness the object of psychological investigation, both emphasize the need for a further study of the self-experience.

There are at present in the psychological field three main types of theory of the self, no one of which has as yet been thoroughly established from the point of view of experimental psychology.

The Self of Scientific Psychology

The first type to which reference has been made is the type of theory, embodying a conception of self commonly referred to by psychologists as the "self of scientific psychology."

J. S. Moore in *The Foundations of Psychology* has given the following brief summary of this conception of the self.

"The 'self' of scientific psychology is merely a convenient term for the sum-total or interrelated system of all the experiences of any given individual from birth to death; just as the term 'nature' as used in the physical sciences stands for the sum-total or interrelated system of all physical phenomena, not for any 'permanent' and 'unique' reality underlying those phenomena. To go beyond this, and to speak of the Self or Nature as anything more than a sum-total of phenomena, is to leave the bounds of science and enter the realm of metaphysics."¹

Professor Pillsbury has given perhaps the most detailed and painstaking exposition of the self from this point of view, and his discussion of the self may therefore be regarded as typical of the self of scientific psychology.

¹ J. S. Moore. *The Foundations of Psychology*, 1921, 75.

Professor Pillsbury's description of the self is as follows:

"The self is merely all that we are and know, organized, self-unified, and self-identical, a growing vital unity that as a whole is effective in every experience. When it is directed toward the control of action, we know it as will; when choosing from the many stimuli that offer, as attention; when interpreting the stimulus, as perception or judgment; when constructing new forms from old experiences, as reason. But it is the same everywhere, always active, and active in very much the same way in every kind of mental process. With a self of this kind we do not need to abandon logic for emotion, nor need we, after some conclusion has been painfully attained, abandon the results of our analysis and go back to our crude common sense prejudices. The self is at once an empirical fact and a logical interpretation of an empirical fact."¹

"It is a principle of explanation, but is immanent, not transcendent, effective not shadowy. It is a principle of unity that arises from experience and gives unity to experience, an identity that persists in experience and progresses with experience, a knower of mental states that develops from mental states, and is at the same time something empirically known, nothing mystical or mysterious in its nature or actions."²

"Both will and self I would class as functions. Will is the function of masses of experience, in part immediately present, in part more or less remote, so far as they are active in the control of action. In the same way I would define self as the function of all that we are, active in the interpretation of new experiences and in taking them up into the persistent unity of experience."³

Professor Pillsbury's conclusions regarding the self-experience are based not upon controlled observation of the experience under experimental conditions, but upon the logic of deductive reasoning which starts with experience as immediately given.

¹ W. B. Pillsbury. *The Ego and Empirical Psychology*. *Phil. Rev.*, 1907, 16, 406.

² *Ibid.*, 407.

³ W. B. Pillsbury. *The Ego and Empirical Psychology—A Reply*. *Psych. Bull.*, 1908, 5, 61.

Professor Pillsbury states in regard to his method of procedure, "My starting point is the same as my critic's, the mental content as immediately experienced. Our ways diverge only in that I believe that both mental content and self are abstractions that have existence only in so far as they can be made to explain experienced fact. . . . I turn then to immediate experience and endeavor to show that the functions that are usually assigned to the self can be derived from known aspects of the immediately given."¹

The functions of experience to which Professor Pillsbury chiefly refers are the functions of persistence or endurance and of synthesis or unity.

Appeal is made to the experimentally demonstrated facts of the retention by the organism of memorial associations, which cannot, however, be consciously recalled, of the determination of attention through association and the principle of congruence, of the control of consciousness through *Aufgabe*, of the importance of past experience in the phenomena of perception, action, emotion, will and feeling, and, finally, to the facts of dissociation of personality to establish the thesis that permanence and unity are functions of mental states conceived as active, not passive, and are not therefore functions of a self or knower transcending the mental states.²

The old problem, how are mental states known, is met by the assumption that "knowing is but a process of combining old mental states with new. If there be a knower, it is experience as a whole. To know the self as self, so far as that is possible, is a process of the same kind."³

"To take some one concrete act, if any act is concrete, and to bring it into connection with a wide mass of similar phenomena that interpret it, on the one side, and on the other, take it over into themselves to enrich them, is to know."⁴

¹ *Ibid.*, 60.

² W. B. Pillsbury. *The Ego and Empirical Psychology*. *Phil. Rev.*, 1907, 16, 393-396.

³ *Ibid.*, 401-402.

⁴ *Ibid.*, 402.

The whole position is perhaps best summarized in Professor Pillsbury's book upon attention.

"1. The idea of a self has usually been introduced to explain the fact that mind shows unity and self-identity, and that mental states do not exist merely but are known.

"2. These facts cannot be satisfactorily explained on the assumption of a mind apart from the states, but are perfectly explicable if we regard the interacting mass of experience as the self.

"3. Unity comes from the mental interaction of all elements of experience past as well as present.

"4. Persistent self-identity finds its explanation in the fact that no experience is ever entirely lost, and that new experiences are never entirely new but are new arrangements of old experiences about a new element.

"5. Mental states, like external objects, are known by being taken up into existing types earlier crystallized from the experience."¹

To complete Professor Pillsbury's picture of the self-structure, the following statement should be added:

"What, on the mental side, is an organization of experience, is, on the physical side, an organization of the nervous system. . . . Every phase of self-activity could be paralleled by brain activity."²

Criticism: It is obvious from the foregoing summary of the self-experience that Professor Pillsbury places our knowledge of self upon the same basis as our knowledge of all other aspects of experience.

The great difficulty with Professor Pillsbury's position which identifies self with the entirety of experience, with "all that we are and know"³ is the necessary deduction that we must be always self-conscious, a conclusion which contradicts the intro-

¹ W. B. Pillsbury. *Attention*, 1908, 217-218.

² W. B. Pillsbury. *The Ego and Empirical Psychology*. *Phil. Rev.*, 1907, 16, 405.

³ *Ibid.*, 406.

spective reports of observers, wherever the self-experience has been made the object of special investigation.¹

In view of the demonstrable fact that consciousness does not always and under all circumstances involve the self-pattern or configuration even when, according to Professor Pillsbury, all the details of the pattern are by hypothesis always present, entirety of experience, pure and simple, can not be regarded as a sufficient and satisfactory explanation of the phenomenon under discussion.

Self of Sensationalistic Psychology

The second general type of explanation offered for the self-experience, is the sensationalistic type which attempts to reduce the experience of self wholly or chiefly to complexes of kinaesthetic or organic sensation.

Professor James and Professor Titchener are the chief exponents of this position.

Professor James's explanation of the self-experience based upon personal introspective observation is clearly and briefly set forth in the following paragraphs:

"In a sense, then, it may be truly said that, in one person at least, the '*self of selves*,' when carefully examined, is found to consist mainly of the collection of these peculiar motions in the head or between the head and throat. I do not for a moment say that this is *all* it consists of, for I fully realize how desperately hard is introspection in this field. But I feel quite sure that these cephalic motions are the portions of my innermost activity of which I am *most distinctly aware*. If the dim portions which I cannot yet define should prove to be like unto these distinct portions in me, and I like other men, *it would follow that our entire feeling of spiritual activity, or what commonly passes by that name, is really a feeling of bodily activities whose exact nature is by most men overlooked.*"²

"Let the case be what it may in others, I am as confident as I

¹ E. B. Titchener. A Note on the Consciousness of Self. *Amer. J. Psych.*, 1911, 22, 540-552. Cf. also *infra*, p. 11.

² W. James. *Principles of Psychology*, 1890, 1, 301-302.

am of anything that, in myself, the stream of thinking (which I recognize emphatically as a phenomenon) is only a careless name for what, when scrutinized, reveals itself to consist chiefly of the stream of my breathing. The 'I think' which Kant said must be able to accompany all my objects, is the 'I breathe' which actually does accompany them. There are other internal facts besides breathing (intracerebral muscular adjustments, etc., of which I have said a word in my larger *Psychology*), and these increase the assets of 'consciousness,' so far as the latter is subject to immediate perception; but breath, which was ever the original of 'spirit,' breath moving outwards, between the glottis and the nostrils, is, I am persuaded, the essence out of which philosophers have constructed the entity known to them as consciousness."¹

Professor Titchener's position is similar to that of Professor James, though Professor Titchener does not attempt a detailed description of the self-experience.

In place of such description, Professor Titchener submits the following table of components of the self-experience, tabulated from the introspective reports of thirteen observers, and arranged in order of frequency of the various component parts:

"Organic complexes	12	
Visual imagery	10	
Affective processes	8	(implied in 4 other cases)
Kinaesthetic complexes	8	(probably in other cases, merged in organic)
Conscious attitudes	4	
Verbal auditory images	4	
Cutaneous sensations	2	

"The attitudes are those of responsibility (F), recognition of ownership of introspection (E), ownership of experience (D), and activity in background of consciousness (F)."²

¹ W. James. Does "Consciousness" Exist? *J. Phil., Psychol. & Sci. Meth.*, 1904, 1, 491.

² E. B. Titchener. A Note on the Consciousness of Self. *Amer. J. Psychol.*, 1911, 22, 551.

The further statement is made that "Self-consciousness appears, in many cases, as an intermittent mode of conscious experience. Like other conscious attitudes, it takes shape, explicitly or implicitly, under determination. And so far as our results go, the determination is usually social in character."¹

Criticism: Although Professor Titchener has undertaken an experimental study of the consciousness of self, the method of experimentation adopted is not the method of controlled introspection of an experience arranged under laboratory conditions. The method is on the contrary a questionnaire method, and the answers to the questions are in every case based upon remembered experience, not upon an experience under immediate observation.

The conclusion that self-consciousness is intermittent is based upon the answers to the following question, eleven of the thirteen observers answering the question in the negative:

" 'I am always, inattentively or attentively, *conscious of myself*, whatever the other objects of my consciousness.' Is this statement true, as a matter of experience, (a) in everyday life, (b) in the introspective exercises of the laboratory? " ²

The conclusion that the self-experience usually arises under a determination which is social in character is based upon the answers of the eleven observers, who had decided in favor of the intermittence of self-consciousness, as against its omnipresence, to the question, "Under what circumstances, then, is it likely to appear? " ³ Ten of the eleven observers report either implicitly or explicitly a social determination.

The chart of components of the self-experience, quoted above, is compiled from answers to the following question, "Is the consciousness of self explicit (*e.g.*, visual image, organic sensations) or implicit (intrinsic to the nature of consciousness, inherent in the course of consciousness)? Can you bring out the

¹ *Ibid.*, 551-552.

² *Ibid.*, 542.

³ *Ibid.*, 548.

character of the self-consciousness by comparing or contrasting it with other phases of a total consciousness?"¹

Professor Titchener has stated that he does not think it wise to press the data contained in these answers further than is required for the compilation of the chart, although a study of the thirteen answers to the foregoing question shows that ten of the thirteen observers feel that the constituents of self-consciousness listed in the table do not give a complete description of the self-experience. Three of these ten observers describe the experience of self as consisting "chiefly" or "for the most part" of organic sensations and visual images. A fourth observer states that self-consciousness

"involves organic sensations, and feelings of bodily position and of comfort and discomfort. In the presence of other people it is often connected in some way with their approval or disapproval; and almost always, whether I am alone or not, there is a strong sense of my own approval or disapproval."²

The reference of this observer to experiences of approval and disapproval clearly involves a meaning factor which is not accounted for in Professor Titchener's charted components of self-consciousness, unless it be to some slight and undefined extent included in the component of conscious attitudes.

Portions of the answers of six other observers are quoted in order that the emphasis upon a meaning aspect of the self-experience, which is clearly included in the descriptions, but which is not represented in the compilation of the data therefrom may receive a fair measure of consideration.

The reports are as follows.

Dm. ". . . The self is a thing meant, a complex logical entity. . . . But that logical entity is represented in the total consciousness of almost any moment in that way which I have already mentioned, viz., the habitual attendance of certain psychic groups. Other designatory terms, so to call them, are visual images of myself in a particular situation, also auditory images of my voice and of voices speaking to me, and again various combinations of these with kinaesthetic images of activity."³

Dsf. "The consciousness of self is not comparable with the consciousness of external objects. It is not explicit in the sense of coming as visual imagery or

¹ *Ibid.*, 545-546.

² *Ibid.*, 546.

³ *Ibid.*, 546.

organic sensations. It is rather an inherent feeling or knowledge or attitude that tells me that I am that which has images and sensations. Not a consciousness of my physical self as the object of experience, but an underlying unique knowledge of myself as the experiencing subject. I cannot seem to be able to get at it or to analyze it further in introspection. Often it is intense, but often it is merely the background of experience."¹

Ff. "Sometimes the self appears as a visual image, as if it were a thing apart and separate. The self to which I refer in my answer is, however, an intangible something, forming a sort of background, in which (as I have said) I can distinguish organic sensations."²

Am. ". . . Besides the clear sensations in self-consciousness, there are always poorly defined visual images, such as translucent rays being projected from the region of my chest where the organic sensations are strongest, and meaning 'I am the center of this experience.'"

"The self-conscious experience seems more often to be a part of other experiences than a thing of itself. It colors the meaning of the others. In itself it resembles the experience of effort, but differs slightly in meaning and in its persistence."³

Bm. "It seems to me that all sorts of sensations and feelings may refer to that which experiences, to that which owns and appropriates the experience. I cannot now be more explicit."⁴

Em. "Self-consciousness is partly explicit, manifest in a visual image of myself, organic sensations and kinaesthesia, and in part implicit, as when I recognize my introspections as material peculiarly my own, which E could not directly know."⁵

It may fairly be concluded from a reading of these reports, that when the sensationalistic hypothesis of the self-experience is actually put to the experimental test, this type of explanation is inadequate to the task of dealing with all observable aspects of the experience, and particularly with just that aspect which characterizes the experience for the observer as a self-experience.

Self of Self-Psychology

A third type of theory of the self is that of which Miss Calkins is the leading exponent. The following brief summary characterizes this conception of the self.

"The self is indefinable. To define is to assign the object defined to a given class and to distinguish it from other members

¹ *Ibid.*

² *Ibid.*, 546.

³ *Ibid.*, 547.

⁴ *Ibid.*

⁵ *Ibid.*

of the class; and the self is *sui generis* and therefore incapable of definition. . . . The self, though indefinable, is not on this account elemental and thus indescribable. . . . The characters of the experienced self on which the self-psychologists lay their emphasis are, first, its persistence or self-identity; second, its individuality or uniqueness; third, the fact that it is fundamental or basal to its experiences, and finally the fact that it is related to its environment, social and physical."¹

"By 'self' I denote the object of the observation expressed in the words 'I am conscious of myself.' . . . The self is a highly complex being which may be described by an enumeration of its characters. Among these characters of the self the following are surely fundamental."² A brief description is given of the following characteristics.

1. Persistence.
2. Change, development.
3. Uniqueness.
4. Complexity inclusive of perceptions, emotions, thoughts.
5. Relatedness.

"All these characters, it must be added, are immediately experienced. The self, thus described, is observed and not merely inferred; is, therefore, a psychological datum which is taken over into philosophy when reflection discloses that it is the unique fact which can neither be denied nor even doubted without being at the same time asserted."³

"A self as psychic fact is not an object of philosophical argument but of immediate consciousness. In other words, no question arises of its ultimate nature: it is taken for granted, as any object of any science is, without further investigation. Just as a mineralogist takes for granted that there are stones, and just as a zoölogist takes for granted that there are animal bodies, so a psychologist takes for granted the existence of selves."⁴

¹ M. W. Calkins. *Amer. J. Psychol.*, 1915, 26, 495-496.

² M. W. Calkins. *Psychol. Rev.*, 1917, 42, 279.

³ *Ibid.*, 280.

⁴ M. W. Calkins. *Psychol. Rev.*, 1906, 13, 66.

Miss Calkins explicitly states that "By self as fundamental fact of psychology is not meant . . . the psycho-physical organism, body plus consciousness or body regarded as possessed of consciousness."¹ In other words, Miss Calkins rejects the conception of self as defined by Professor Pillsbury. Miss Calkins's self is conceived as distinct from body, but related to it. In other words, "it precisely *has* a body, and does not *consist in* body, is not made up of body-and-mind."²

The sensationalistic theory of self is also rejected on the basis of incompleteness of description. Miss Calkins repeatedly asserts that "the 'idea' is immediately experienced as idea of a self, or subject, mind, ego—call it as one will."³

"Anything less than self-consciousness would not be consciousness at all; to be conscious is to be conscious of a conscious self."⁴

Miss Calkins's thesis that "an adequate account of consciousness includes, with an analysis into structural elements, an account of the self as unique, persistent, and in relation to an environment personal and impersonal,"⁵ is fully expounded and ably defended throughout her published writings.

Criticism: Although Miss Calkins has appealed consistently to the facts of introspection in support of her systematic position regarding the self, almost all of the criticism encountered by the theory has been formulated upon the level of logic rather than upon the level of observation. A short bibliography of criticism of the position of the self-psychologist may be found in Moore's *Foundations of Psychology*.⁶

It has already been pointed out that Professor Titchener's experimental study of self-consciousness⁷ does not establish the universality of the self-experience, the ubiquity or omnipresence of self.

To discover whether or not an introspective study of the self-

¹ *Ibid.*

² M. W. Calkins. *J. Phil. Psychol. Sci. Meth.*, 1908, 5, 14.

³ *Ibid.*, 1907, 4, 678.

⁴ M. W. Calkins. *Psychol. Rev.*, 1906, 13, 68.

⁵ M. W. Calkins. *J. Phil. Psychol. Sci. Meth.*, 1908, 5, 122.

⁶ J. S. Moore. *Op. cit.*, 86.

⁷ E. B. Titchener. *Op. cit.*, 540-552.

experience would establish the other alleged characters of the self, namely its relative persistence, complexity, uniqueness, and relatedness to environment, was one of the main purposes of the present investigation.

It will be evident from the experimental section of this dissertation, that the particular characters assigned by Miss Calkins to the self, are not the characteristics emphasized by the observers in this experiment, and are therefore not the aspects of the self-experience which are immediately observable, under experimental conditions.

The characters of persistence, complexity, uniqueness and relatedness to environment seem on the contrary to raise problems applicable to a partial consciousness, to the meaning aspect of an experience, from which the sensory or content aspects have been substantially abstracted.

When both the meaning and the content aspects of consciousness are observed introspectively in the unity of a concrete event, and the description of experience is unhampered by conventionality of report, an experience of self is reported, as in the following investigation, which bears resemblance both to the self of the sensationist, and to the self of the self-psychologist, but is different from either in that in this more comprehensive description of experience neither sensory nor meaning aspects can occur independently of the other.

In concluding this criticism of self-psychology, reference should be made to Miss Calkins's careful summary¹ of introspective report and experimental work which seems to her to support the conception of self adopted by the self-psychologist,—notably of the experimental study of recognition by Katzaroff, of voluntary choice by Michotte and Prüm, and of volition by Ach, but it should be remembered, in any attempt to evaluate these studies as evidence for a particular theory of self, that each of the investigations has for its primary objective, the description of a particular type of consciousness other than the consciousness of self. Reference is therefore made by the experimenter to an

¹ M. W. Calkins. *The Self in Scientific Psychology*. *Amer. J. Psychol.*, 1915, 26, 495-524.

experience of self on the part of an observer of which no adequate description is attempted by either.

A further bibliography of introspective report and experimentation, bearing upon self-psychology was prepared by Miss Calkins a year later.¹

Summary of Current Views of Self

This brief review of the current theories of self should serve the purpose of showing that the greatest difficulty hitherto in dealing with the consciousness of self has been the failure to do introspective or observational justice to the total aspect of the experience investigated.

The theory of self attributed to scientific psychology, and represented by Professor Pillsbury, fails to account for the observable fact, experimentally established, that experience is sometimes differentiated into patterns of self-consciousness, and is sometimes not so differentiated.

The sensationalistic theory of the self emphasizes the sensory and imaginal aspects of the self-experience to the entire exclusion of the meaning aspect which is fundamental to this type of experience.

The self-psychologist overemphasizes the meaning aspect of the self-experience to such an extent that the meaning aspect tends to be isolated from the concrete experience, and to assume the proportions of a concrete entity in itself.

The following investigation of the experience of self was undertaken in the faith that an introspective study of this type of consciousness, which should emphasize full and free description of the total experience included in self-consciousness, might resolve to some extent the inconsistencies apparent in a survey of present opinion upon this perplexing problem.

¹ M. W. Calkins. The Self in Recent Psychology. *Psych. Bull.*, 1916, 13, 20-27.

EXPERIMENTAL

The present investigation was undertaken with the purpose of discovering

(1) whether there is an immediate, unanalyzable experience of self, in Miss Calkins's sense of the term "self," which is observable to introspection; if so,

(2) what are the attributive terms which most accurately describe it, and

(3) whether such consciousness of self is present in all experience, or whether it accompanies one kind of experience to a greater extent than another.

The problem involved was to provide, if possible, experimental conditions under which genuine "self-experiences" should occur to the observers in the laboratory and to obtain from the observers, should they report such "self-experiences," a thorough introspective or observational account of the "self-experience."

Four observers took part in the experiment, Mr. Louis Frazier and Mr. Hulin, both second-year graduate students in psychology at Harvard University, Miss Roxanna Murphy, a third-year graduate student in psychology at Radcliffe, and Dr. Roback, National Research Council Fellow at Harvard. Because of the nature of the problem to be investigated, and consequently of the necessity for precise introspective description, the results of the experimentation are based upon the observations of a small number of well trained observers, three of whom, however, had not been trained in the traditional, orthodox type of introspective report, rather than upon observations of a larger group which would necessarily have included observers with less experience in reporting.

Experiments, Group I

A group of preliminary experiments was first undertaken, in which no explicit reference was made to "the self" in the directions to observers. The experimenter sought to obtain first of

all a thoroughly unbiased report from the observers, which should include at least some reference to the self, should such a phenomenon prove to be content of the consciousness introspected.

The materials used in this preliminary experimentation were conventional designs of variegated colors constructed, like the nonsense syllable, in such a way as to exclude, so far as possible, all meaning associations, with the purpose of making the introspective analysis of consciousness, after presentation of the stimuli, as simple and direct as possible. Two designs oval in shape were mounted upon gray cardboard, and displayed simultaneously to the observers by removing covers which exactly fitted the designs.

The observers were then given the following directions.

"I shall show you simultaneously two conventional designs, one of which I shall ask you to describe in detail after a second showing of the stimulus. Choose the design which you would like to have shown to you a second time, for the purpose of describing it. After an interval of time has been given for describing the figure, an introspection will be called for."

The observers were allowed to examine the designs until a choice was made between the two. The time occupied in effecting a choice was measured by counting the swings of a pendulum, and recorded by the experimenter. After O had indicated a choice, the stimulus was again exposed for a period of five seconds.

After a few minutes spent in describing or reproducing the selected design, an introspective report was called for in accordance with the following directions.

" Procedure for Introspection "

" Note: In these descriptions try to cover the entire range of consciousness called for even if in doing so you sacrifice the details of some one part.

" 1. Describe the consciousness involved in perception of the first exposure of the stimuli, with especial attention to all processes that accrue to the original core of visual sensations.

"2. Describe as completely as possible your conscious experience in choosing the design.

"3. Describe as completely as possible your conscious experience from the moment of choice to the second showing of the stimulus.

"4. Describe as completely as possible your conscious experience in attending to the chosen stimulus for the second time."

By calling for an introspection fractionated into four parts as described above, some report was expected of the nature of the self as revealed in (1) perception, (2) volition, (3) anticipation, (4) attention and recognition.

Because of the emphasis upon full introspection, the number of experiments completed within the laboratory hour differed to some extent with the individual observer. Observers F and H used the entire hour for completing one experiment, Observer M completed two experiments within the hour, and R sometimes three. Observer F gave two hours a week to the experimentation, the other observers one hour each. The introspective reports obtained from these preliminary 16 experiments (6 for Observer R, 5 for Observer M, 3 for Observer F, and 2 for Observer H) are not included in the number of reports upon which the general results of this investigation are based, because it was obvious from later experimental reports that exact description of the self-experience depends upon direct observation and explicit analysis of the self-experience, attentively observed, as such.

Two results of this preliminary experimentation, however, deserve mention. The first is the fact that three of the four observers make use in their introspective reports of verbal terms which seem more or less explicitly to imply a self. The second result, apparent only from later experimentation, is the fact that although an observer may make use of terminology which seems explicitly or implicitly to imply a self when the self-experience is not the immediate object of observation, the same observer may use quite different descriptive terms when the self-experience is the immediate object of observation, and when the description is therefore made as exact as possible.

The following examples are characteristic of the type of report obtained in the foregoing experiments.

OBSERVER F

Perception

"After the exposure I was first conscious of a confused jumble of colors and figures. I restrained an impulse to just let the eye wander over the two forms, and caused my eyes to focus and remain fixed on small portions of the forms. I was conscious of effort in doing this. I then shifted my eyes rapidly back and forth from one form to the other, comparing them."

Volition

". . . The recollection of having previously selected the figure with crosses was followed by an impulse to select the figure with crosses. This impulse was temporarily inhibited by the thought that I mustn't do the same thing every time, and an impulse to choose the other, but this was not sufficiently strong to permanently inhibit the first impulse. The instant of hesitation was characterized by kinaesthetic sensations of tension, and a feeling of unpleasantness."

Attention

"While observing the figure, I was alert, with occasional sensations of strain. I was conscious of more than the ordinary amount of drive. My attitude was, 'I must make up for this handicap.' I was conscious that I was succeeding in giving closer attention than heretofore, and in grasping the essential parts of the figure more satisfactorily. The effort was pleasantly toned."

Recognition and Attention

"First, a feeling of familiarity. Then a complex of bodily sensations which meant, 'I must make myself remember this figure; I must make myself observe and remember my experience.' There was a very definite conative drive. There was also a feeling of helplessness manifested by an impulse to relax. There was an effort to discover some systematic arrangement, something meaningful about the figure. The attempt to fix the contours in mind was accompanied by eye-movement and bodily kinaesthesia. Color memory was, I think, largely verbal. In memory, I can image the forms, contours, better than the colors."

OBSERVER M

Volition

"Kinaesthetically, I vacillated—a sort of surging and ebbing directed towards one at a time and then 'umgekehrt.' I thought of the qualities (mentioned in 1) and of the possibilities for describing each. The affective value of the right-hand one was stronger and more definite."

Volition

"I chose from form-quality, definite meaning and affective quality. This latter was stronger in the case of the right- than in the case of the left-hand

one. The kinaesthetic sensations tensed and relaxed as I vacillated between them, inclining to tense when the right-hand one was regarded."

Anticipation

"Visual imagery of both designs. Then will forcibly eliminated the left-hand one by paying attention to the right-hand one. Kinaesthetic strain."

Attention

"I took the upper left-hand corner and by voci motor response, reeled off the names of the colors, visualizing them as colors, as I did so—then the tongue of green, the white—as a scroll—not visually imaged except as general image of what a scroll in general could be. Then I puzzled over the collarette and object to which it was attached. At last I took one flying glance at the cerise in the upper right-hand corner and got a formless sensation of cerise to add to the memory-image of the rest of the design. . . ."

Attention

"Attention less strained. There was conscious attempt to define pattern of the four pillows. I counted number of dots in respective parts of design and (voci motor imagery) said 'red,' 'red,' accompanied by bobbing of head from above down—then shift to other side as described under (1). I shut my eyes to get visual imagery, then snapped back as I realized that time was going. Kinaesthetic tracing of design and localization of parts took place with right-hand."

OBSERVER R

Volition

"As usual, viewed both and decided that I was to make a better job this time. Both appeared more difficult, because they did not make a recognizable object, and so many details! I thought the right easier, because put it into a card-playing category, began to memorize the difficult things and said, 'right.' Attitude of opposition interfered with the viewing of the left, for there was a retroactive inhibition. Knew that I couldn't compass all the details, especially as the left design seemed detached in its parts. In all these experiments, I am always surprised how little I do remember after the perception."

Criticism: It was obvious to the experimenter, after reading these preliminary reports, that the experience provided under the conditions described above was too complex and extended over too long an interval of time for satisfactory introspection on the part of the observers. It was also obvious that such references as were made to an experience of self under these conditions were too general to be of real value in an experimental study of the self. Since, however, there appeared to be some evidence that an experience of self might be found under suitable

experimental conditions, and since the introspective reports upon the volitional aspect of experience, gave the best promise of further results, a second group of preliminary experiments was undertaken, with the purpose of discovering to what extent the observers might be self-conscious in a genuine experience of choice. A simple experience of recognition was also arranged under laboratory conditions to follow the experience of choice with the twofold purpose (1) of providing a further promising basis for a possible consciousness of self, and (2) of making the task of describing the essential features of a given experience less difficult, through the opportunity thus offered the observers of comparing or contrasting the given experience with another type of experience which should offer both points of resemblance and of difference.

Experiments, Group II

In this group of experiments also, no specific question regarding the experience of self was asked of the observers, for the experimenter desired to obtain, if possible, a perfectly free and voluntary description of the self-experience, should it occur. The materials used throughout the second group of experiments were similar to those used in the first group.

The directions given to the observers in the second group of preliminary experiments were as follows.

" 1. I shall show you simultaneously two conventional designs. Make a choice between the two (as free a choice as possible). *Introspection:* Describe as completely as possible your conscious experience in choosing the design.

" 2. I shall show you simultaneously two conventional designs. After a five seconds' exposure of both, one of the two will be shown to you a second time. *Introspection:* Describe as completely as possible your conscious experience in recognizing the design.

" 3. What differences occurred introspectively between these two experiences of choice and of recognition? "

This group included 21 experiments (5 for Observer F, 2 for

Observer H, 7 for Observer R, and 7 for Observer M). This group of experiments has also been excluded from consideration, in the final results of the experimentation, for the same reason as was advanced in the case of the first group of preliminary experiments, namely that, inasmuch as the observers were not attending primarily to the experience of self, as such, the experience is not described with sufficient exactness to be of value in an experimental study of the self.

Criticism: The chief contribution of this group of experiments is the evidence, in somewhat more definite form than that derived from the first group of experiments, that three of the four observers are describing, however fragmentarily, some content that seems to involve self-reference.

The following examples have been selected from the introspective reports, as indicating some degree or aspect of what may be called consciousness of self.

OBSERVER F

Difference Between Choice and Recognition

"The difference seemed to be due to a difference in attitude. In making the choice, I was alert—bodily tension, heightened bodily tone; I was set to make a choice; I had a job to do. These things seemed to consist partially in patterns of tension, and partially in some X factor. In recognition, I was passively receptive, relaxed, not keyed up, perhaps less attentive. The experience in the first case seemed far richer and more complicated than in the second case. This may have been due in part to attitude and in part to the fact that the second experience (recognition) actually was more simple. The first was pleasantly toned; it was perhaps hardly a *voluntary* choice because it came with so little effort. The second was neutrally toned."

"In preparing for and making the choice, I had a feeling of being more active than in recognition. Eye-movement, voluntary alternation of attention, the choice itself contributed to this feeling in the first case, and were largely lacking in the second, and yet I was not conscious of effort, as I had been in previous experiments."

"The choice was gradual, and issued out of a series of steps. The recognition was, by comparison, immediate; it seemed inherent in the perception, and came, I think, at an early stage in the perception."

"The choice was definitely voluntary; it required more or less effort, although the effort was not focalized in consciousness as being important—the conative set, or whatever you may choose to call it, took care of that—but it was active and to some degree effortful."

"The recognition, on the other hand, seemed to force itself on me; in fact its effect was like that of some sudden, unexpected stimulus. A similar sort of conative set probably was responsible for this, too. But the effect, the experience in consciousness, was much like that of an involuntary reaction."

OBSERVER M

Choice

"Finally I chose the left-hand one. It took some time to make up my mind. Eye-movements occurred during shift first to one, then to the other. Both were similar in color and general appearance. The left-hand gave more of a tension, the right one more organic sense of freedom and expansion, coupled with kinaesthesia in chest which gave tension and expansion for the respective designs. Finally choosing affectively, the tension became more pleasant. That design seemed more 'characteristic.' Hence, the choice. Throughout there was the sense of compulsion, of having to choose one of them. This caused strained attention."

Recognition

"When the two designs were first shown, I characterized one as 'pink around edge,' the other as 'green in middle,' by voci motor process. The visual sensations as to design and color, as well as the voci motor of characterization, appeared in interim following exposure. When the one design was again shown, I immediately responded with voci motor of 'pink around edge,' and also with a fleeting visual image coupled with voci motor of 'green in middle' of the other one."

Difference Between Choice and Recognition

"The experience of choice required more strain of attention and in this case more kinaesthetic imagery. In that of recognition, the voci motor sufficed. Also, once the choice had been decided upon, I was free to forget the second design. In the recognition experiment, the visual images of both were recurrent in the experience. Visual sensations occurred in experience of choice; visual sensations plus imagery in experience of recognition."

OBSERVER R

Choice

"Very difficult to choose because conflicting factors kept interfering. Colors on the left more saturated, but more black ink there, too. Irregularity on left was interfering factor. Black specks on right tended to show careful work. Noticed that the black dots were at bottom of paper last time. Choosing itself very difficult. Simply couldn't make up mind, because every time I started out to make final choice, something else turned up for consideration. The final choice was made voluntarily (injunction to oneself) because of consciousness that this was taking too long a time, and consequent embarrassment (thoughts, plus organic complexes, references to oneself, irritation with oneself, contrasting oneself with other people)."

Choice

"Choice again very difficult, and what was less preferred before is now preferred as contrasted with new object. Irregularity of 'right' still noticeable, especially where line cuts or breaks a unitary figure but there was less black ink in this figure. In 'left' the irregularity, though not suggesting brokenness as in the 'right' was more indefinite and the ink with irregular crosses gave an untidy appearance. That was the deciding factor, when added to others. Choice is not carried out on single basis but involves several and it is almost arbitrary. Idea occurs, 'I must put an end to this,' due to consciousness of being slow—comparison of self with other people."

Choice

"In this one, novelty was not so great, because I had a similar one before. Hence it was indifferent. Began again to single out differences, and noticed that intention was to make them pretty much alike. As I grew impatient, singled out a certain part which was better done than a corresponding part in the other design and summated it with another detail that I fancied in the same one and chose it. Choice here also self-imposed rather than spontaneous. The taking apart of details and noting differences and distinctions, I call creative activity and find it pleasant."

Observer H throughout this group of experiments, as throughout the earlier group, describes experience in terms of process only. The following is a characteristic report of Observer H.

OBSERVER H

Choice

"*Fore-period:* From the verbal instructions, 'To make as free a choice as possible . . . ,' there was a general kinaesthetic relaxation, a passivity (to allow the stimulus to strike as it would); nevertheless, there was a medley of incipient tendencies of tiny yet overt auxiliary muscle extensions, as well as covert imageries of visual and aud-voc-mot types predominantly. Visual imageries principally consisted in memories, many-hued, and many-formed patterns (such as were in the former experiment). There were shifty eye-movements occurring whenever anything like a realistic design as of a landscape would develop, which would inhibit this tendency to see landscapes. (This latter was a negative Aufgabe of avoiding the determinant which had influenced the choosing in the past.) In aud-voc-mot imagery, there were the usual sets of 'choose,' 'compare,' etc."

"*Mid-period:* With the presentation of the two stimuli, there was an immediate overt release of a fluctuation-wise response from one oval to the other. In an immediate total visual impression the left oval was composed of blue-greens and the right of red-yellows. The ocular fluctuations reverted more and more constantly upon the red-yellows in quite a purely tropistic manner (the eyes clung stickily to the reds and yellows)."

"There was a sudden recognition of the right oval, which consisted of the following. In a sudden visual focussing upon three spots of orange

in the left side of the right oval, there suddenly developed a visual memory-image of the 'landscape' chosen at a former sitting. This memory-image had the three spots upon the right-hand side and the incipient response of the visual memory-image so coincided with the motor response to the present visual excitation that the general motor strain now flowed out in a reinforced unitary burst. Great ease and exhilaration developed immediately, even to an actual bit of laughter. There was an incipient exclamation of 'Upside down!' The memory-image of the formerly perceived 'landscape' was somewhat successfully reversed with some oculo motor effort, and this imaginal response coincided still more with the present excitations. (The principal characteristic of the 'recognition' experience was the ease with which the present stimuli were incepted.)"

"But from the contrariwise Aufgabe which had been set up, there was now a general tendency to revert to the other oval. In general there was quite a constant visual imagery scheme of a magazine cover. With this imaginal background there was some potentiality to observe the data, some bit of actual responsiveness to the data. In any other imaginal set which occurred (and whatever else that may have occurred was so fleeting that no memory has remained of it), there was only an increased mass of inhibitive strain, with this strain occupying the most of consciousness. (It seems that there simply *had* to be some sort of unified imaginal sieve through which the excitation could be directed if any intelligent response whatever was to be made to the data.) From the visual 'magazine cover' Aufgabe, there developed an ocular motor fixation attitude of taking in the two ovals respectively, simply as total surfaces (just as one might casually glance at a magazine cover as one passes by a news stand). In this attitude there was immediate conflict with the left oval, for here there was a conspicuous arch-shaped path which defied any effort to make a totality of the oval. Then in fluctuating back to the right oval, the general underlying motor surge of 'choosing,' of pouncing upon one or the other of the two ovals, now became completely overt, and as the right oval was easily perceived as a unified surface, the choice was consummated."

"*After-period:* Great bodily ease; an exhilarated leaning toward the right oval, both for the chromokinetic tropism and for the 'magazine' Aufgabe fulfilled."

Recognition

"Upon exposure of the stimulus, there happened to be quite an immediate fixation upon a green leaf-shaped patch in the right oval. Immediately a visual image of the selfsame form developed. (The vividness of this imagery made it seem to be a memory-image.) And from this memory-image an expansion developed, including a whole oval of imagery (that of the 'landscape' formerly chosen). Particularly was the patch of three pink spots in the lower right-hand corner vivified by the memory imagery. There was again a great ease and facilitation in the coincidence of imaginal and excitatory oculo motor responses. This great ease also constituted 'pleasantness.'"

"In the time during which the two ovals were observed, the left oval aroused only a blurred bewildering and inhibitory melee of visual imagery. There was not much more than inhibitory restraint—not even a unified sense-perception of the oval."

Difference Between Recognition and Choice

"Recognition, I think, is mostly the coincidence of imagery, especially very vivid memory-imagery, with the present excitation—particularly in terms coincident with the respective motor aspects of the responses. The recognition is especially vivid, perhaps, when both excitation and imagery are of the same sense modality. But even where a certain excitation arouses a univocal and uninhibited vocal response of naming—one name comes out vivid and alone—again recognition seems quite complete; but particularly if this sort of naming is added to coincidence of the duplication within one sense modality, as in vision in the present experiments. Choice is a sort of 'recognition' between the present excitation set up and the basic Aufgabe; particularly in the blending of the two motor aspects."

These two groups of preliminary experiments, then, served the purpose of demonstrating that three of the four observers were conscious of themselves to some extent, in some sense. The problem before the experimenter at this point became the problem of finding out in what sense an observer was self-conscious—of obtaining as precise a description as possible of the experience of "self," as it occurred under given experimental conditions.

Experiments, Group III

Accordingly, a series of experiments was undertaken, precisely similar to the second group of preliminary experiments, but with the addition of a final direct question regarding the nature of the self-experience. The directions to the observers, therefore, for this set of experiments, read as follows:

"1. I shall show you simultaneously two conventional designs. Make a choice between the two (as free a choice as possible). *Introspection:* Describe as completely as possible your conscious experience in choosing the design.

"2. I shall show you simultaneously two conventional designs. After a five seconds' exposure of both, one of the two will be shown to you a second time. *Introspection:* Describe as completely as possible your conscious experience in recognizing the design.

"3. What differences occurred introspectively between these two experiences of choice and of recognition?"

"4. Were you conscious of yourself during these experiments? (a) When? (b) Describe the experience."

This series included 37 experiments (11 for Observer F, 6 for Observer H, 10 for Observer M, and 10 for Observer R).

Observer F reported a consciousness of self in 9 out of the 11 experiments, the experience occurring 9 times under the conditions arranged for choice, and 4 times under the conditions for recognition.

Observer H consistently reported, "No experience of self."

Observer M reported a consciousness of self in 9 out of 10 experiments, the experience occurring 8 times under the conditions for choice, and 4 times under the conditions for recognition.

Observer R reported a consciousness of self in 2 out of 10 experiments, twice under the conditions governing choice, and once under the conditions governing recognition.

Inasmuch as the final results of this investigation of the experience of self are based entirely upon data obtained in these and subsequent introspective reports, that section of the reports, which deals explicitly with the self-experience, namely, section 4 of the directions given to observers, is illustrated rather fully for each observer, where circumstances permit. Other sections of the reports are quoted only where they contribute to a fuller understanding of section 4, inasmuch as only the explicit references to self, have been considered in this dissertation as evidence of the self-experience.

The following reports are characteristic of the type of report obtained in this series of experiments.

OBSERVER F

December 13. Choice

"I perceived that these designs were new and unfamiliar and similar. I then thought of the situation at the previous experiment, when I had judged the designs symmetrical. The question arose, 'Are these, too, symmetrical?' This was followed by the judgment that they probably were symmetrical and that consequently there was nothing to choose between them. I thought 'I may as well choose one as the other.' At this stage, there was a mild

feeling of expansiveness, as though I were enveloping both designs. Neither of them inspired any impulse to reject it. My selection of the left hand design seemed to come more or less as a matter of course, without much effort. I was conscious of the fact that I had selected L at the previous experiment, and that this was probably motivating my choice. But there was no conscious, 'I chose L last time; *therefore*, I will do the same now.' There was a momentary impulse to choose R—to do something *different*—but it was fleeting and quite ineffective."

Self-experience

"In choice I was conscious of myself in the sense of realizing that I had experienced a similar situation before and that I was reacting to it in a similar manner. And when I thought, 'I may as well choose one as another,' I thought of myself in the same sense that I had no preference and that my choice would have no consequences for myself."

December 18. Choice

"I attended to L for about 2 seconds, and then to R, perceiving almost at once that they were different; but the question then arose as to how they differed. I was set to find some point of difference that would give me a rational basis for selection. I turned again to L, my attention centering on a certain irregular oval; then to R, seeking a similar oval. This I found, but it was different, although in what way was not clear. I again turned to L and back to R. In this way I became aware that L was constructed of narrow lines, and R of heavy, wide lines or figures. The experience was pleasant. I was drawn toward the heavier design as soon as I perceived the nature of the difference. I looked again at L, but R seemed to get my attention. The decision consisted in this focussing of attention, plus incipient tensing of certain bodily muscles in such a way as to have moved me toward R if the tension had been stronger. It was accompanied by vague organic sensations which I didn't notice until relaxation, after the decision had been made."

Self-experience

"In choice, I was at times conscious that I must make this selection; that there was an obligation on my part. This was not definitely formulated, but this feeling that I was responsible for getting this done came to me on two or three occasions."

December 20. Choice

"Both seemed equally pleasant. I liked them both, and was conscious of the fact. I saw that there was no basis for choice which would issue directly out of pleasantness. So I said to myself, 'Go to now! I'll make as purely voluntary a choice as I can, and see what happens.'"

"I took a deep breath, and set myself to make a choice during the expiration. As nearly as I can get at it, the choice was preceded by a marked tensing of muscles, generally, and by a strained tension localized in the head. As the expiration began, this tension was such as to direct bodily impulses to the

nearer design. I can't find any conscious choice other than the consciousness which attended upon the perception of the direction in which these incipient bodily impulses were turning. The particular form which the tension took meant to me that I was turning toward the nearer object in the sense of physical movement, and the perception of the direction of this incipient physical movement meant to me, under the particular Aufgabe, 'This is my choice.'"

"The tension continued and the movement increased until its meaning had been confirmed through persistence. The whole experience, although it involved effort, was pleasantly exhilarating."

Self-experience

"I was conscious of myself in setting the task to be done during the expiration of the breath. It was 'I' who was going to do the task."

"I was also conscious of myself early in the experiment when I realized that I liked both designs—that both were pleasant to 'me.'"

"I do not recall having been conscious of myself at other times, although I have a feeling that I was somehow vaguely conscious of myself all during the act of choice—in the sense of self-effort—that it was 'I' who was making the choice, but the experience was not in any way clear, and if present at all it was on the very fringe of consciousness."

January 3. Choice

"After looking at L and R alternately two or three times, I decided that I should have to make an arbitrary selection. I then made the selection very quickly. Just preceding the selection, my eyes were fixated upon R, but aside from this fact, I made the selection without any noticeable preceding movements or strain. I made the selection and was quite conscious of the fact that R was my choice—and then came something which felt very much like a sudden jump of blood pressure which merged into a momentary general bodily tension. But the decision itself seemed to consist in some sort of meaning that I can't tie up with anything else—which made me aware of the fact that I was going to select R."

Self-experience

"In choice, I was conscious of some sort of relationship existing between the task and myself. I felt that 'I' was a factor in the situation."

January 8. Choice

"After glancing at L and R and perceiving their essential similarity, I looked steadily at R, seemingly fascinated by a certain triangle in the design which was darker than the rest of the figure. I was conscious that there was a similar heavy triangle in L, although differently located—and yet I continued to look at R. As I was doing this, in a state of unworried and irresponsible uncertainty, there gradually arose an attitude toward R, which, as it became more definite, resolved itself into the meaning, 'Well, I may as well select this one as any.'"

"I could 'feel it coming,' gradually, without, in its early stages, being

certain that it would result in a definite decision. I was aware of no strain, tension, bodily movement of any kind, until the 'meaning' became vaguely subvocal, and even then there was nothing involved but a bit of barely perceptible movement at the back of my throat which seemed to help carry the meaning."

Self-experience

"Vaguely self-conscious in choice, as I became aware of the fact that I was making a decision—as being something that 'I' was doing—although it was quite unimportant—and made no difference to me."

January 15. Choice

"Perceived first the similarity of the designs, and, with the thought that they might be identical, I recalled H's remarks to me about the difficulty of making a selection between identical designs. This was attended by a bit of anxiety. Almost immediately, however, I noticed one striking point of difference—a certain part of the R design was larger than the corresponding part of L. My attention was fixed more on R than on L—the meaning of the relationship was, not that L was smaller, but that R was larger."

"My thinking was in terms of R; I alternated between impulses to accept or reject R, and the necessity for positive action led to acceptance of R. The drive in back of the choice—the thing that turned a shade of attention or preference into an active choice—was, as usual, the desire to maintain my self-respect by avoiding undue hesitation and vacillation in making a decision. Without some such reinforcement of the Aufgabe (or is this all to be included as part of the Aufgabe?) a minor preference would not be so immediately effective in leading to a choice. I was set to make a decision, but this other 'drive' seemed to come with a running jump from behind—it seemed different from the 'set' proper."

Recognition

"Familiarity as a part of the perception. Later, the meaning, 'Yes, I saw this before, under such and such circumstances, and I recall thinking so and so about it at the time.' I wonder how much of this is necessary for real recognition."

Self-experience

"Conscious of self, especially in the second part of the recognition experiment, although this was after the elementary form of recognition had already occurred; also in the so-called 'drive' mentioned in choice, although no idea of self was focal in consciousness. The feeling of responsibility, desire to maintain self-respect, etc., involved self-reference."

January 22. Choice

"Experienced pleasant surprise that the designs were so different from each other. The difference meant that it would be easy to choose. L was pleasant, relatively, from the beginning, and so, after noting the main characteristics of each, I selected L. The selection grew out of the judgment

that L was more pleasant than R. I was conscious all along that here was a criterion to which I could ascribe my choice. Even so, in the moment of choice, there was a slight tensing of muscles, especially of throat and chest. What this tensing meant at the time I do not know."

Recognition

"I searched diligently for a noticeable point of difference between the two but without success. I was left in a somewhat confused condition which was a bit unpleasant. When L was shown, it was at once perceived as familiar, but I felt balked and dissatisfied because I did not know which of the two it was. There was a feeling of inadequacy and emptiness. I realized that I was unable completely to identify the design. I did not succeed, then, in really recognizing it."

Self-experience

"A complex seems to have been formed about 'self'! Although I am sure that there was self-reference and perhaps even consciousness of self during the experiments, I can't now get at the experiences to describe them. Especially in recognition, I was acutely conscious of 'my' inability to recognize the design. I felt balked. There was certainly a kind of self-reference, but I can't get at it."

February 12. Self-experience (Choice Experiment)

"I approached the problem with the attitude, 'I must make a choice,' and I noticed, after glancing at the designs, that I definitely said these same words, sub-vocally. Accompanying the saying of the words there was a vague consciousness of general organic sensations, in which two heart beats seemingly stronger than usual, stood out. There was no particular tension; it was as though I were to think for an instant of my body. But there was something which meant 'I,' beyond the sub-vocal saying of 'I.' It seemed to be something beyond the complex of organics, and yet not especially different from it—much as a sensory image of some kind is related to a sensation. I am not able to decide for myself, however, whether it actually was anything more than a complex of organic sensations."

Self-experience (Recognition Experiment)

"This was even less clear-cut than the preceding. First, familiarity came, without any consciousness of self as far as I am aware; then, 'Yes, I saw that a moment ago,' like a flash, disappearing almost immediately. There was no self-reference sufficiently definite for me to describe; it was there, I think, but only as a minor part of the meaning, 'I saw that a moment ago.'"

February 19. Self-experience (Choice Experiment)

"This was a little more definite. All through my hesitation there was a vague consciousness of self, which once or twice popped out toward focality. Again it seemed to be basically, a unitary complex of organics, which helped, at least, to give the meaning, 'I.' The occasions when it became more clear were accompanied by more lively kinaesthetics and a

more definite consciousness of responsibility, of the relation of the task to myself. The 'I' did not stand out as distinct from the organics, and I cannot think of them as distinct. When analyzed, this particular consciousness gives mostly organics, and the 'I' almost fades out; but when taken as a whole, the consciousness means 'I.'"

Self-experience (Recognition Experiment)

"Recognition was incomplete, and led to questioning, 'In which place did I see this before?'"

"Self-reference was pretty well swallowed up in the host of visual and kinaesthetic imagery with which I tried to identify the design. There was no self-reference which I can describe—the experience was too confused. As I look back, I can see that there must have been some self-reference but I can't get at it."

OBSERVER M

December 17. Choice

"The left one was my choice. It seemed better distributed over the page and balanced. Such was my verbal-motor comment due to a feeling of kinaesthetic spread-out-ness, while the right-hand one seemed to cause intense kinaesthetic contraction, eyes fixed definitely at one point with a wrinkling of brows attendant on it. Attention was passive so far as I was concerned; the design aroused the response all by itself."

Self-experience

"Choice is more personal experience than recognition, because one's own reactions cause the response. In the first showing of the stimuli in the recognition experiment, I was conscious of empathy akin to that first aroused by the two designs in choice, but in choice, my experience went further."

January 7. Choice

"Chose left due to feeling of expansion caused by the one detail that was different, versus kinaesthetic contraction. Looked at all of both designs. Read meaning of 'box' verbally into closed part and of 'wings' into more open one. Then chose on kinaesthetic terms as well as because of kinaesthetic visual sensations, which made figure more a part of the whole design. Aesthetic feeling of balance and continuity gave affective tone of more pleasantness in the one I chose."

Self-experience

"Conscious of self very much in choice. I forced myself to examine minutely, and to seek associations, and an affective aspect in order to choose."

January 14. Choice

"Attention exerted to determine what difference existed in the two designs which gave similar sensations, at first, from their color and general arrange-

ment. The resulting kinaesthesia was more outspread and calm, while in regard to the left-hand one I felt more tensed and concentrated."

"Therefore I chose the right-hand one, on account of resolution of kinaesthetic responses, intellectual appreciation of symmetrical arrangement and possibly the feeling-tone of 'more pleasureable than' which accompanied the perception of kinaesthetic responses."

Self-experience

"Conscious of self in choice. I forced myself to take in any difference I might find by scrutinizing, and also to feel which was my choice."

January 14. Choice

"Right chosen. No particular difference in designs except that the left one had a more prominent lower left-hand corner. This was kinaesthetically responded to after a long interval in which I minutely scrutinized all details of almost identical designs, and then responded verbally—being urged kinaesthetically to choose one and then the other—'the right is aesthetically better balanced in respect to corner.'"

Self-experience

"Conscious of self in choice. I feel a kinaesthetic urge to go in one direction or another. A little voice keeps saying, 'You've got to choose.' In the recognition experiment, I let the designs be presented, taking account of only general features, as opposed to more critical attempt to distinguish distinctive features in choice."

January 21. Choice

"Looking at both the designs, I saw that they were very similar, practically identical. Then on examining them more in detail, while obeying a kinaesthetic urge that compelled me to choose one or the other, accompanied by a disturbed feeling of knowing task had to be done, I finally found a curve on left-hand one, while right-hand one had an angle. The curve was more aesthetic and did not give me the jump which the angle did. Chose the left-hand design."

"The Aufgabe presented itself as a disagreeable task, that had to be gone through with, and that suggested compulsion to make organism do it."

Self-experience

"Conscious of self in choice as impulsion from within, causing a drive to do task, and as restlessness."

January 21. Choice

"Chose right-hand one. Color more attractive, and aroused more kinaesthetic response. No kinaesthetic response to left-hand one. I positively liked the curley-cue of the right and wriggled with it."

"Aesthetically, right one had more character, stood out, and attracted attention immediately. The other was passed over visually and forgotten."

Recognition

"Problem of open and closed box. Visual images of both designs, and especially of designs just seen in choice experiment, between exposures."

"Open box seen again. Response was to 'open box' carried verbally and looked for in particular part of design when it occurred."

"Since there was only one differentiating factor, this was only part of design that I took into account either at first showing of both, or of second showing of one."

Self-experience

"Conscious of self in pleasure aroused by choice. 'I' did the feeling. In recognition, 'I' did the comparing, the verbal response and the recognizing."

"The urge to choose was missing. Therefore self was not so deeply affected, but was more widely involved in the whole experience, both in choice and in recognition."

February 20. Choice

"Chose left because of kinaesthetic jump, which the vertical lines in the design gave me. The right-hand one had so much more of a quiescent effect, kinaesthetically smooth and easy going."

"Aufgabe: I was ready to react to one or the other."

Self-experience

"Conscious of self in choice as striving and as forcing myself to choose."

February 27. Choice

"At first, these seemed the same as in a former experience of choice. Kinaesthetically, one was spread out, the other concentrated, but well balanced. Being told they were not the same, I looked further and discovered a cock-horse design in the right-hand one. Strained attention gave this, and the meaning thus arrived at decided my choice, because it added affective pleasure and piquancy to the situation."

Self-experience

"Conscious of self in choice, in trying to differentiate the two designs."

OBSERVER R

January 22. Choice

"Pleasant feeling came on exposure at the novelty. At first, the two designs, looked alike. Then as task to choose became more vivid in consciousness, as the novelty wore off, the details began to be scanned for differences. The fact that the 'right' had only a touch of green in the windows—southeast corner, made it the more preferable. Then began to look for other differences, such as the quality and number of crosses, size of windows in upper corner. None of these differences appeared important enough to change decision. The decision in this case had been made, but was being held up for possible revision. Don't feel as if I could make a

better choice by going over details again. Conscious simply of a tendency to fill in by taking different attitudes, such as interpreting figures, looking at one phase, stressing a particular side. There was a kind of idea which amounted to, 'Why waste time like this? Choose or rather make your choice known and be done with it.'

Recognition

"The recognition here was merely understood. I knew I had seen a *like* figure, but would not swear that it was the same. The recognition was due to the recall of an image."

Self-experience

"Not conscious of self, except perhaps for questions such as, 'Did I see this before?' or 'Why waste time?'"

February 12. Choice

"Choice here was very difficult. There was real conflict and I felt myself going from one to the other, discovering each time a new detail for consideration pro and con. Both about equally pleasant. 'Left' had more clearness to its symmetry, balance, etc., but 'right' had more colors, yet at first didn't suggest anything. It was here that I began to think about my individual traits, connecting this situation with others—proclivity for clearness, insistence on content. Just about the same time, the other design began to suggest something 'springy,' summer-like, gardens, flowers, and I was attracted to it. The other also began to take more definite shape. The corners were seen as heads of cattle in various positions. This still gave the advantage to the 'right' with its indefiniteness, yet pleasantness. Scanning the details, however, showed off the chocolate color as coarsely done, also the clumsiness of the ink line, and I thought again favorably of the left because of its workmanship. Alternated for a little while between one and the other, until strain was felt, just as if one had a burden on one's mind. Finally the idea came up to relax the whole attitude and to choose the one which should present itself first in inclination to choose, since one could keep on going indefinitely from one to the other and then not know whether the choice is satisfactory."

Self-experience

"Self here mentioned in choice is of a recollection of situations, reading, reflections, comparisons with other people—a sort of condensed biography—nothing else."

The following report of Observer H is typical for this group of experiments.

OBSERVER H

December 14. Choice

"*Fore-period:* Usual general motor attentional set. Auditory-vocal-motor 'blank design' with visual concomitant of blurred vari-colored surface and

vocal motor 'not magazine cover' with visual imagery of shifting surfaces along with more particular oculo motor strain of inhibiting a particularized visual imagery of a magazine cover. The effort to have just a generalized Aufgabe of 'design' consisted in keeping a kaleidoscopic shift to various colored surfaces."

Choice

"*Stimulus*: Immediate blanket perception of two general wedge-shaped contours in each oval respectively. Colors similar. A constraint from quite an inhibitory balance between the two ovals occurred. The left wedge pointed to the right, and the right wedge pointed to the left. There was more emphatic response of attention then to the oculo motor kinaesthesia in following the two wedges—an effort to acquire great ease in following one or the other. As a not coincidental Aufgabe pattern seemed present to be coincided with, there was a debilitating and scattered variation of strains—again a mutual inhibition. Visual imagery (in retrospect) seems to have been quite lacking, except that in visual imagery, one of the ovals was turned around, and there was a schematic auditory, vocal imagery of 'reversed-identical.' The heightened tonicity from the inhibited situation burst forth in overt laughter. Then with some constraint, the left oval seemed to give an easier oculo motor response, probably from a reading-wise habit."

"The left oval was chosen. The 'choosing' Aufgabe of springing toward the picture burst through, upon the opportunity of the slightly easier oculo motor following of the left oval contour. The background of constraint consisted in lack of any coincidence of stimulus to fit any prepared Aufgabe, i.e., I could scarcely choose either oval as a design in terms of the habitual cues for balanced design."

Recognition

"*Aufgabe*: 'To recognize.'"

"*Fore-period*: Considerable oculo motor fidgeting concomitant with an array of visual imagery—nothing particular, as it so happened—just varicolored oval patches."

"*Stimulus*: The two stimuli were immediately labeled in auditory-vocal-motor terms—left oval, 'arch'; right oval, 'three spirals.' General ease, almost lassitude was present."

Recognition

"In a quite instantaneous *reflexive* way, the visual excitation of a red archway brought out the auditory-vocal-motor incipient exclamation, 'arch.' There was very little other responsiveness noticeable. No constraints were present, as an attitude of doubt. The thing simply seemed oversimple, habitual!"

Difference Between Choice and Recognition

"In choice, the Aufgabe is something definitely fixed upon and the perceptual material is reacted to in terms of it; whereas in recognition, the

Aufgabe is more one of passivity, so that the responsiveness will fit with the stimulus more immediately."

In answer to the question, were you conscious of yourself during these experiments, Observer H writes:

"No 'self' consciousness was present. For the various strains and imageries do not seem at all to be bound up into any coördinated unity. True, there are infinite variations of inter-responsiveness between responses, but nothing of a unity or even of a continuous uniqueness of any thing running throughout the experiences. There simply seem to be multitudinous pushes and pulls in the efforts of various integrated sections against or with each other to issue dynamogenically into overt response."

Criticism: A study of the foregoing introspective reports contributes, in addition to the actual descriptive data submitted, two important facts regarding the so-called experience of self. The first is the fact that attitude or determination affects the results. When the attitude of the observer is to an appreciable extent one of responsiveness to the total situation, the self-experience is reported more frequently and with a greater degree of assurance than when the attitude is one of responsiveness to details. When the attitude of the observer is keenly analytic, and when observation is focussed narrowly upon detailed aspects of the experience, as for example, details of the sensory content, the self-experience is either not reported at all, or is reported as vague and illusory. The most telling evidence in the foregoing reports for the importance of attitude or determination is to be found in the total inability of Observer H, the most thoroughly trained observer from the point of view of the orthodox introspective method of observation, to experience self except in terms of sensory content, and, secondly, in the change which takes place in the reports of Observer F, as observation is more critically directed upon the particular aspect of sensory content. I refer, in this connection, to the description of the self-experience as reported by Observer F for February 12th.

"When analyzed, this particular consciousness gives mostly organics and the 'I' almost fades out; but when taken as a whole, the consciousness means 'I.'"

The second important fact, to which reference has been made, is the explicit or implicit inclusion of meaning as an essential factor in the pattern of experience described as experience of self.

The scope of this thesis does not permit the elaboration and defense of a theory of meaning, and yet a clear understanding of the analysis of the above and subsequent reports demands at this point a brief statement in regard to meaning, as an empirical or experiential factor in the type of consciousness under consideration.

In the first place, it is obvious from the reports of Observer F, that meaning is as characteristic a factor of the total experience under observation, as the so-called sensory content, and as such is entitled to consideration in any description of experience which aims essentially at completeness. The following examples are selected from the reports, already quoted, of Observer F, in order to emphasize the immediately experiential nature of the meaning aspect of consciousness, throughout this series of experiments.

OBSERVER F

December 20

"The particular form which the tension took *meant* to me that I was turning toward the nearer object in the sense of physical movement, and the perception of the direction of this incipient physical movement *meant* to me under the particular Aufgabe—'This is my choice.' The tension continued and the movement increased until its *meaning* had been confirmed through persistence."

January 3

"I made the selection and was quite conscious of the fact that R was my choice—and *then* came something which felt very much like a sudden jump of blood pressure which merged into a momentary, general bodily tension. But the decision itself seemed to consist in some sort of a meaning that I can't tie up with anything else; which made me aware of the fact that I was going to select R."

February 12

"But there was something which *meant* 'I,' beyond the sub-vocal saying of 'I.' It seemed to be something beyond the complex of organics, and yet not especially different from it—much as a sensory image of some kind is related to a sensation. I am not able to decide for myself, however, whether it actually was anything more than a complex of organic sensations."

February 12

"The 'I' did not stand out as distinct from the organics, and I cannot think of them as distinct. When analyzed, this particular consciousness gives mostly organics, and the 'I' almost fades out; but when taken as a whole the consciousness means 'I.'"

For Observer M, meaning and sensory content are so closely interwoven in experience, that the two aspects are seldom discriminated in the introspective reports. In other words, the functional or activity-aspect of consciousness is *observationally* for this observer of more importance in these experiments than the structural or content aspect, but function can obviously be described only in terms of meaning. The following examples are characteristic of Observer M's failure to distinguish in analysis between the meaning and content aspects of experience.

OBSERVER M

January 7

"Conscious of self very much in choice. I forced myself to examine minutely, and to seek associations, and an affective aspect in order to choose."

January 21

"Conscious of self in choice as impulsion from within, causing a drive to do task, and as restlessness."

February 20

"Conscious of self in choice as striving and as forcing myself to choose."

"Conscious of self in choice, in trying to differentiate the two designs."

Observer R reports meanings in connection with the self-experience, though the distinction is not so explicitly formulated as with Observer F.

OBSERVER R

January 22

"Not conscious of self, except perhaps for questions such as, 'Did I see this before?' or 'Why waste time?'"

February 12

"Self here mentioned in choice is of a recollection of situations, reading, reflections, comparisons with other people—a sort of condensed biography—nothing else."

Observer H in an introspective report for March 13th, not belonging to this series, but quoted in this connection for the sake of clarity and completeness, writes as follows:

OBSERVER H

"Meanings to me are quite experiential—involving the degree to which some process started becomes resolved overtly. Sometimes we seem to have a meaning start of visual imagery or localization, then some other incipient response (imagery), probably latent in the Aufgabe, becomes stimulated associatively, and now commencing to become an overt response blocks the antecedent responsiveness. Thus meaning, as the first responsiveness, becomes either inhibited or modified by filtering into this new aspect of responsiveness—and so on, until finally the whole original constraint, whatever it was, of the Aufgabe, set up by the stimulus, becomes overt. The degrees of becoming overt constitute a very experiential meaning."

The evidence is clear, that, regardless of the particular conception of meaning implied in these reports, *i.e.*, whether meaning is dealt with as idea, according to the terminology of Locke, and illustrated by the reports of Observers F and M, or as verbal response, or verbal imagery in the reports of Observer R, or as incipient or overt response in the making, as in Observer H's report, meaning is acknowledged by all four observers to be an aspect of experience which is reportable, which is a part content of the consciousness under introspection, and which is therefore experiential.

Furthermore, meaning and sensory content occur together in a total pattern throughout the experiences described above. Where both the meaning and the content aspects of experience are not differentiated, the meaning aspect is the more immediately observable aspect. Observer F, for example, during the first two months, covered by the experiments of this series, reports only the meaning aspect of the self-experience. Not until the introspective report dated February 12th, is there any description of the sensory aspect of the experience. Observer M, as has already been noted, does not in this series of experiments discriminate between the two aspects, but reports chiefly meanings.

This position regarding the immediately observable aspect of meaning accords well with Professor Pillsbury's discussion of

meaning.¹ It should be made clear in concluding this brief statement in regard to meaning, that when we deal either with the meaning aspect of experience alone, or with the sensory aspect alone, we are dealing with abstractions convenient for the purposes of psychological analysis and no longer with experience as such.

If, however, meaning can be shown to be an observable aspect of consciousness, scientific psychology has no longer any right to exclude meanings from the realm of psychology unless it is also ready to exclude sensations, for both are but classificatory terms logically constructed in order to deal with the experience of a functioning structure or organism sometimes from the point of view of function, meaning, and sometimes from the point of view of structure, sensory content. If it is true, as Professor Titchener has claimed, that "scientific description . . . is always an instrument of reconstruction," so that "the reader of the observer's report must be able to reconstitute, to reconstruct" ² the experience described, then it is necessary that both meaning and content be included in an adequate description, since experience undoubtedly occurs in unitary patterns presenting a meaning aspect to the observer immediately and upon analysis of details, a structured pattern.

The actual descriptive data regarding the self-experience, as contained in this group of reports, will be tabulated in a later section, with the data from the three following series of experiments.

Inasmuch as three of the observers were by this time somewhat familiar with the essential features of the self-experience, the experimenter attempted to discover whether or not these observers could accept as descriptively true of their own experiences the following characterizations of the self-experience, quoted from published articles of Miss Calkins.

¹ W. B. Pillsbury. Meaning and Image. *Psychol. Rev.*, 1908, 15, 150-158.

² E. B. Titchener. Description vs. Statement of Meaning. *Amer. J. Psychol.*, 1912, 23, 168.

1. "Not only mental imagery, but the consciousness of myself as 'the same ego then as now' is essential to recognition."¹
2. "'Psychic facts belong to individuals.'"
"A feeling is either mine or somebody else's."²
3. "'All genuine psychic processes, states, or functions of a subject, belong to an I.'"³
"We can not talk of experiencing without an I which experiences' and which constitutes the 'essential foundation' of the experiences."⁴
4. "The fourth of these fundamental characters of the self is its relatedness. I think of myself not only as unique, but as related, not only as a this-not-another, but as a this-in-relation-with-another."⁵

The above quotations refer to the characters or properties of the self defined by Miss Calkins as persistence, uniqueness, the characteristic of being "fundamental or basal to its experiences," and the characteristic of being "related to its environment."

All four observers emphatically reject the first quotation—Observer M, however, with the following reservation: "Does not seem to apply at all. If I thought it over, possibly I could force myself to see the application."

All four observers admit the truth of the second qualification, but all with some reservation that there need be "no consciousness of the fact of self or of what it is" to quote again from the report of Observer M.

Observers H and R reject the third proposition. Observers F and M express uncertainty. Observer F's report expresses the uncertainty most clearly, and is as follows:

"I cannot tell from these experiments. Many of the processes took place without consciousness of an 'I' to which they were related. And yet this fact does not eliminate the possibility that there may have been an 'I' without which the processes would not have been psychic. The fact remains, however, that processes did occur in which I was not aware of the intervention or participation of any 'I.' This is as far as I can go."

¹ M. W. Calkins. *Psychology as Science of Self. J. Phil. Psychol. Sci. Meth.*, 1908, 5, 65.

² M. W. Calkins. *The Self in Scientific Psychology. Amer. J. Psychol.*, 1915, 26, 496.

³ *Ibid.*, 496.

⁴ *Ibid.*, 496-497.

⁵ M. W. Calkins. *Psychology as Science of Self. J. Phil. Psychol. Sci. Meth.*, 1908, 5, 68.

The fourth characterization is rejected by all four observers, by Observers F, M, and R on the ground that the quotation is not descriptive of what is observationally present in a given experience of self.

Experiments, Group IV

Inasmuch as the recognition experiments throughout seemed to have contributed comparatively little to this investigation of the self-experience, it was thought advisable to substitute for the recognition experiment a more active type of experience, and an attempt was correspondingly made to follow the choice experiment, as already outlined, by the solving of a problem, and to ask for a comparison of these two experiences with the hope of providing ultimately the best conditions possible for the experience of self.

Many of the problems used in the following experiments were selected from the National Intelligence Tests, the Stanford Achievement Tests, Advanced Forms A and B, the Thurstone Vocational Guidance Tests, the Terman Group Test of Mental Ability, and the Otis Group Intelligence Scale, Advanced A. Some problems were included from miscellaneous sources, because they seemed to the experimenter to be good problems for the particular purpose.

The observer was asked in each case to solve the problem mentally after hearing it read by the experimenter and to give the answer orally to the experimenter who recorded the time spent in solving the problem, with the aid of a stop-watch.

The time intervals recorded for the solution of the problems are not, however, reported in this dissertation for any observer in this or the later series of problem experiments for throughout this series of experiments, as throughout the earlier series dealing with choice and recognition, it was evident to the experimenter that the time factor was in itself of little importance in the determination of the self-experience.

This series comprised 16 experiments (2 for Observer F, 1 for Observer H, 9 for Observer M, 4 for Observer R). The follow-

ing examples are characteristic of the reports obtained from this series.

OBSERVER F

February 25. Choice

"The self-reference was not clear, but it seemed to enter in as a part of the conflict at the instant of making the decision and immediately following. Both figures were pleasant and the decision was difficult. Even while carrying out my decision by pointing to L, I was conscious of leaning toward, 'reaching out' toward R, as though *that* were the figure I had rather have chosen. The self-reference entered vaguely into the effort of the decision and the regret which followed it. I cannot seem to describe it further than by telling the conditions under which it occurred. Effort, strain, hesitancy were present in the whole consciousness, and were bound up in some way with the self-reference, but in a way which I cannot now describe."

Problem

"Inability even to formulate the problem. Many instances of self-reference, bound up with struggling, bafflement, effort, etc. At times there seemed to be something which was I, and this something was struggling, trying to think clearly, etc. It was all bound up with sensations of various kinds, and yet it seemed quite real in itself. I was so confused by the problem, however, that I could not observe clearly."

Comparison of Choice with Problem

"The self-reference in choice was merely a fleeting reference; that in the problem was persistent. But—I can't get at them adequately. They are so confused with other things,"

OBSERVER M

February 29. Choice

"Kinaesthesia on right-hand design was $\uparrow \downarrow$; on left-hand one $\rightarrow \leftarrow$. It was hard to choose which one I preferred. I kept referring back to first one and then the other. Finally kinaesthetic pleasure from left-hand one was more pleasant and so I chose that. The kinaesthesia was of calmer kind, besides being of sidewise type of motion. Verbal imagery occurred. 'Which shall I choose?' Colors did not play any affective part; uniqueness of design made me favor the right-hand one for a while. Self-reference occurred in effort, consciously recognized, of having to choose, kinaesthetic tension presented to an active chooser."

Problem

"Self-reference when I reduced yards to feet. If it had been only yards in answer, the self-reference would not have occurred. Much verbal imagery, intellectual reasoning; little kinaesthesia or visual imagery. Self-reference occurred from presenting the kinaesthetic sensations of effort to a consciously acting individual."

Comparison of Choice with Problem

"There was self-reference with both. More kinaesthesia to be presented in first case and more urge, consciously felt, to bring it up. Pleasure of kinaesthesia was lacking in problem, also effort of choosing."

March 5. Choice

"Right hand one appealed because meaning of dots on left hand one was 'spotted plague,' and this meaning created a kinaesthetic upset. Self-reference, slightly, in getting the meaning and referring it to 'me' present in consciousness at that moment."

Problem

"This involved self-reference in that the problem did not solve itself. I had to do it. I got muddled, acquired headache, and the effort of trying made matters get more muddled, so it seemed. There was an emotional reaction of objecting to this tangle of logic. As soon as light seemed to dawn, I lost self-reference, then got plunged back into it and had to work harder."

Comparison of Choice with Problem

"Emotion in problem, not in choice. Self existed simply as effort in choice, and in the problem to a greater extent. The meaning eliminated from choice further effort, and the usual conjuring up of self, but did not entirely leave consciousness of self out of the situation."

Inasmuch as Observer R reported no consciousness of self in the choice experiments, the reports quoted for this observer have been taken entirely from the introspective accounts of the problem experiments.

OBSERVER R

February 26. Problem

"Imagery of brick. Faint recollection of school days. Thought that the problem is very easy. Process simple, yet took three steps—first subtracting $\frac{1}{2}$ brick, making it equivalent to 3 lbs., then dividing $1\frac{1}{2}$ or $\frac{3}{2}$ by $\frac{1}{2}$ and multiplying by 3."

Comparison of Choice with Problem Experience

"Greater tension with problem at the very beginning. Choice arouses curiosity in fore-period, agreeableness attached to expectation. In problem, expectation is somewhat relieved by curiosity, but not marked by agreeableness. The burden in the latter is greater all through. The solving of the problem gives greater relief than the actual choice gives, for you know you are right. No reference to self, except for those fragmentary recollections."

February 26. Problem

"Problem again brought recollections of school days. Instantly thought of proportion, and tried putting the figures together for the formula, but got

no satisfactory answer. Then began mind-wandering, with intermittent insistence of determining tendency. Had no self-reproach, because thought there is no use for such problems at this time. Slight amusement that I should not be able to do a problem of that sort."

February 26. Problem

"Difficulty of taking in all the data makes it unpleasant. Have to keep recalling the numbers or else am stuck for the next step. The problem excites some aversion as inconsequential. Detect at fringe of consciousness some attitude which means, 'O let children do this.' Meanwhile interesting thought comes up, 'How I have changed.' As a boy, took delight in mental arithmetic matches. Fleeting recollections of school days. All that interferes with the solution. Have to pick up again the threads, but find it easier now to collect myself. The process of multiplication and division requires moving of hands or at any rate kinaesthesia."

"The self again is represented by memories of differences in situations."

The report of Observer H upon the problem consciousness is reported in full.

March 5. Choice

"*Fore-period:* In attentional set, oculo motor constraint predominant, moving in the habitual action patterns of 'good design.'"

"*Stimulus:* Eyes rested momentarily on left oval—constraint. No gross eye-movements occurred in the visual excitations set up. From the fluctuation-wise set, the eyes moved to the right oval. A huge oculo motor sweep from down left curving to upper right occurred with a considerable ease, which gave immediate, quite general relaxation. The fluctuation-wise set asserted a responsiveness to the extent of one flash back to left oval but a gross bodily tendency had commenced in falling bodily upon the right oval and with another glance and easy eye sweep upon it, the visual motor exclamation, 'Right' burst forth. The whole thing happened quite easily and freely—very automatically indeed—and had no more reference to something behind the responsiveness really than a knee jerk response; hence no self reference."

Problem

"*Fore-period:* Usual attentional set with an 'ultimate' set to respond in auditory-vocal motor terms. Yet 'attention' as usual is constituted mainly in visual images through which the vocal motor responses pass."

"*Stimulus:* Vivid concrete visual images and quite automatic repetition of the question. When E presented the problem, there was a sub-vocal following of her words and this motor process was repeated. Visual imagery then became hazy and confused with some oculo motor constraint; and vocal motor response was intensified with an emphatic repetition of 'one-half, one-third, one-ninth of seventeen doesn't make whole number of elephants—one-half, one-third, one-ninth are factors of eighteen.' Concomitant sketchy

visual image of '1/2,' '1/3,' '1/9,' '18' involving something of a grey line 'number-form,' not in any definite way, only as discrete efflorescences. The auditory-vocal motor response continued quite automatically with a general bodily ease—'these make—two—nine-eighteenths; nine eighteenths; (visual image of 3) six eighteenths—fifteen and (visual image of 1/9) nine into eighteen twice; two eighteenths—seventeen eighteenths.'"

"In this calculation, some figures were immediately translated into visual imagery, were held thus, swiftly alternating with the auditory-vocal motor cues, and then exchanged. The figures 'carried in the head' were projected in visual imagery and the calculation process was quite an automatic verbal, vocal enfoldment. Thus '9,' '6,' carried visually in habitual oculo motor terms transformed in a flash into a visual '15,' etc. Then in a sudden flow of speech: 'one-half, one-third and one-ninth can be factors of eighteen without totaling (visual imagery of '17') eighteen!"

"Only these alternations and facilitations, like conditioned reflexes, between the incipient modes constituted the experience. No self-reference."

Comparison of Choice with Problem Experience

"In solving problem, except for the set of an ultimate vocal motor response, no particular Aufgabe becomes set up. There is just a bewildering interweaving of incipient responses (especially visual and auditory-vocal motor imagery) which flow together in a complex of conditioned response or else the one disintegrates and inhibits the other. But in all there is just a very 'involuntary,' deterministic filtering process which may terminate in a huge overt response, cleaning the organism of the constraints set up. Or there may be no real termination, but just a discomfited see-saw of constraints unfreed and this constraint may irradiate to a general inhibitive blocking, constituting 'unpleasantness' (so-called) throughout the body."

"In choice, the Aufgabe set, in this case of typified patterns of eye-movement for accepted 'good designs,' is quite predominant, and the actual excitations set up by the stimulus are kinetically followed around in a somewhat constrained manner (*i.e.*, constrained by the kinaesthetic Aufgabe set, which is patterned in terms of quite gross movements), so that if a gross movement response occurs from the excitations from the stimulus, then a facilitation between this dynamogenic response and the Aufgabe strains causes a concerted outburst which is choice."

"In both cases a certain set of constraints (Aufgaben) are set up, and a filtering process occurs until these constraints become released—and the Aufgaben restraints thus dissipate away, usually to a great general relief. Both are mere releases of innumerable combinations, some impossible—*i.e.*, inhibitive of progress, and some harmonious and facilitatory. No other background than the Aufgaben constraints—whatever chance happens to set up—are present as a self-reference. Often the Aufgaben have surprising complexities involved, not realized until the filtering process shows up some particular inhibition or facilitation."

The descriptive data obtained from this group of reports, also, will be considered in a later section, together with the descriptive data obtained from the two following series of experiments.

Criticism: Inasmuch as this set of experiments contributed a self-experience under the problem conditions exactly twice as many times as under the choice conditions, the ratio being 10:5, as shown in the following summary,

	<i>Self-experience in problem experiment</i>	<i>Self-experience in choice experiment</i>
Observer F	2	1
Observer H	0	0
Observer M	5	4
Observer R	3	0
	<hr/> 10	<hr/> 5

it seemed best to concentrate throughout the rest of the time available for experimentation, upon the analysis of the type of experience involved in the problem experiments.

Experiments, Group V

The following set of experiments accordingly deals entirely with the type of consciousness involved in the mental solution of a problem, the directions to the observers being simply to describe the consciousness involved in the solution of the problem with special reference to the self-experience, whenever it should occur. The problems were read aloud to the observers by the experimenter, and the time taken for solving the problem recorded as before. This series comprised 128 experiments (28 for Observer F, 11 for Observer H, 38 for Observer M, and 51 for Observer R), in which Observer F reports the self-experience 26 times, 93 per cent.; Observer H, not at all; Observer M, 28 times, 74 per cent.; and Observer R, 8 times, or 16 per cent.

The following reports are typical for this series of experiments. As before, only that portion of the report which deals with the

self-experience or which can aid in interpreting the experience is quoted.

OBSERVER F

March 3. Problem

"After having made a hasty approximate calculation, there were two impulses, one to report the answer, qualifying it as 'uncertain,' and the other to repeat the calculation. Self-experience came in very vaguely here—in the question, 'What will it mean to *me*, if I do this or that?' It was a momentary hesitation and action involved a choice between alternatives. The meaning of each action appeared in the imaginal consequences of the action as referred to *myself*."

"The best experience of self-reference came when E did not acquiesce in my statement of the answer. I said, 'I'm not right, then,' and this was accompanied by a momentary sinking tendency, depressing, relaxing—which was followed by an increased tension. It all meant to me that a mistake had been made and that this mistake was referred to me; it was something which I had done. That was the meaning of the experience."

March 3. Problem

"No reference to self until, after giving the answer, I wondered whether I was right. The reference was vague. It had to do with a slight 'feeling of uncertainty' which was largely subjective. There were also organic and kinaesthetic sensations which were bound up with this 'feeling of uncertainty' and which, in large measure at least, probably constituted it. There seemed to be something over and above the sensory complex, but I can't be at all sure of it. The 'something' seems to give meaning and direction to the sensory complex, rather than the reverse. That this is the case I cannot be at all sure, but that is the way it seemed to me during this experiment."

March 3. Problem

"The principal self-reference came when I corrected my first answer. Something seemed to surge through my body (organics and kinaesthesia), calling attention to myself. The organics occurred, I believe, before the thought of self, and the latter seemed to issue out of the former—they were not distinct. It was as though these represented two stages, which were two ways of looking at the same thing. 'These changes are occurring in my *body*,' and then, 'These changes are occurring in *my* body.'"

March 10. Problem

"Consciousness of self during part of the time I was trying to solve the problem, especially at first when I was experiencing difficulty in reducing $\frac{1}{4}$ and $\frac{1}{3}$ to a common denominator. There was the feeling that I *must* do this, and there was a momentarily imagined self-humiliation in case I should become confused. These references to self were accompanied by tension and heightened muscular tone which were supplementary to the strain accompanying mental effort. There were also organic sensations

a-plenty. And yet the reference to self was as if to something very real. The same sort of self-reference came, immediately following my answer in a momentary lack of confidence in what I had done."

March 10. Problem

"Repeated self-references, bound up intimately with organic sensations of various kinds. Often there was struggling and bafflement without any definite self-reference and at other times (less frequently) the struggling, the 'sinking,' seemed to be in part activities of what I think of as myself. In these cases, it was pretty definitely 'I' who was experiencing the sinking feeling. The sinking feeling wasn't just going on—it was *my* sinking feeling. That, at least, is the way observation gave it. Possibly it is just a matter of meaning, but I am not sure that I am in this case able to differentiate meaning from experience. I think one could interpret it either way one wished."

March 17. Problem

"The chief self-reference followed immediately upon the reading of the problem. It came tied up with the thought, 'I'm afraid I can't do this under the circumstances'; there was a great deal of kinaesthesia and organics—a sinking feeling, followed by rebellion—'How can she expect me to remember my math. offhand,' followed by, 'And yet, I ought to be able to do it.' Self-reference was there, but it was all tied up with other meanings."

March 17. Problem

"A feeling of elation, on being told my answer was correct, was definitely referred to myself. That feeling of 'elation' may be largely resolved into marked organic and kinaesthetic sensations, but the meaning of the whole experience was that this success was mine. What made it seem mine was probably that it followed effort and consisted partly of those most uniquely personal sensations—the organics."

March 17. Problem

"Self-reference when I reconsidered the problem after being told it was wrong—especially on discovering how foolish a mistake I had made. There were plenty of organics, but they seemed only to intensify the self-reference that was already there, *i.e.*, they welled up after I realized what a mistake I had made. I do not say that the self-reference occurred without organic sensations, but that the latter were not noticed until after the self-reference."

"The positive thing to note is that as the organics increased, so did the consciousness of self. The seeming absence of organics at first may be due to the contrast with the vivid experience a moment later."

March 24. Problem

"In introspecting for this experiment, I have come to look first for organic and kinaesthetic sensations. They were, in this case, present when-

ever I was conscious of self-reference. In a selective introspection of this kind, it is difficult to get at the whole truth, because one 'introspects' by looking for certain things in his experience. If he finds them, he describes them. If he lacks fertility, he doesn't know what to look for. Consequently, I feel that most of my 'introspections' are quite incomplete. In the present case, I looked first for organic and kinaesthetic sensations and found them. They meant, for me, certain attitudes and impulses which were mine, in part at least because the sensations to which they gave rise are peculiarly personal. This description is inadequate, but it seemed to constitute the most tangible part of my experience of self-reference. (Perhaps I don't know what to look for.)"

OBSERVER M

March 12. Problem

"A bit more self-reference than usual. It was 'I' who did the figuring and regarded the answers and felt the effort of strain in attempting to get them correct. (Implicit vocal imagery.) Kinaesthesia is responsible for strain. Strain gives feeling of integration. Integration is referred to a person—'me,' who stands over and above the bundle of kinaesthetics. 'Me' and kinaesthesia in attention at same time give experience of self. Kinaesthesia alone in consciousness is merely observable imagery."

March 14. Problem

"Self-reference came when I found my answer to be wrong and kinaesthetic effort added to my troubles so that I referred the data to 'me.' Scrutinizing it more carefully and making added effort, the 'me' did the work and both were in attention at once—'me' including kinaesthesia and the work."

March 19. Problem

"Whenever I tried to hold one answer in my mind in order to subtract it from another, then I was conscious of presenting the figures to 'me' to judge as to their being right or wrong. When the answer was wrong, the 'me' was puzzled. Then all seemed a blank and I began again with the figures as only figures verbally expressed—not related to 'me.'"

March 21. Problem

"Self-reference occurred as something more than kinaesthetic sensations, when I made an added effort to do the work. The self-reference was not so much to an entity 'me' this time as it was a feeling of self being involved. If it had been the entity 'me,' it would have appeared as more actively engaged. Self-reference is of two sorts, one to an entity, the other to less than an entity. Kinaesthesia is at the basis of both. Consciousness of kinaesthesia gives the 'less than entity' reference; consciousness of this plus an activity on the part of something superkinaesthetic gives the real entity. When consciousness of self and the problem are in attention at the same time, then I feel the real self-reference or 'me.'"

March 21. Problem

"Self-reference in being puzzled and in recognizing the 'me' as being the puzzled one. This is in kinaesthetic terms, but self is above it."

OBSERVER R

March 8. Problem

"Mistook bit for thread and lost most of the time wondering how many threads in a screw. Had visual imagery of bits and threads. Felt it was useless to go on, and the only reference to self was the recollection of comparison between myself and others, with judgment that I was inferior mechanically, but superior in other ways."

March 8. Problem

"Disagreeable feeling because of imposition of conditions. Necessity of having visual imagery, yet knowledge that the time was lapsing, and that imagery crowds out the quantity details made me think it was hopeless. Began to do the work nevertheless. Multiplied 50 by 100. Thought of the 5 but didn't know what to do with it. Then imagery came up to assist, but was told to introspect."

"Self was characterized by very dim, marginal recollections of differences with others in mathematical problems, slight annoyance and, at the same time, satisfaction in compensation as to other abilities."

March 18. Problem

"Did this in the ordinary way, but when divided 43 by 10, was surprised that there was a fraction remaining. I took the 4.3, however, added 3 cents and multiplied by 8. Surprised that the answer was not right. There is little urge in such consciousness of attacking the problem anew. I think there is a feeling (marginally) remaining over from school days that if I can't work out my problem under my own conditions, I should not do it at all. The undercurrent is 'Why not let me have paper and pencil and present the problem visually, if you want efficient work?' This comment is in the form of an attitude, rather than in any verbal imagery. This attitude I can not analyze any further. During the working and interference, I sometimes think of other people who have different methods and am slightly conscious of judgments in criticism of their methods and work, though they may be considered highly efficient."

March 18. Problem

"First step was to see how many hours elapsed. . . . Problem seemed more difficult at first because feared it was one of those problems involving the change of places in hands of clock which I dread. General attitude on such problems, especially with the more difficult and uncommon ones is, 'Why bother with them, when they seldom come up in life, and if they did, you could get them done in a jiffy, by somebody who has a knack that way?'"

"Self at most a name for a bunch of condensed memories, cognitive, affective and conative, including judgments, comparisons, etc., and set off, especially when thinking of other people."

March 18. Problem

"Data, given too fast, disappear before they have time to be fixed. This causes groping about mentally and mind-wandering. Attitude becomes perfunctory and time is just filled in. Slight feeling of embarrassment on being told answer was wrong. Recollection of situations of oral examination. Amusement with embarrassment. Self-reference in those recollections of the way I felt in school days."

March 25. Problem

"Perplexity at the difficulty of the problem. Recollections of high school and college mathematics, then reversion to task, almost by effort. Imagery of order, mud, water, etc. Had to visualize or else would not be able to do the problem. Then began to find common denominator, etc. Attitude was as in an examination of previous years, though the actual process of reasoning was not attended by any tension. Satisfaction at getting through. Experience of self is here a verbal kaleidoscopic view of experience much condensed, a complex condensation involving images of others and memories of one's past reactions, statements, etc."

March 25. Problem

"Again recollections of school days (imagery). Thought of the rule of 3 in proportion, but couldn't think of the formula. Multiplied 15 by 6, but thought that would give more and I wanted less. Fumbled about a bit. Just then had reference to self in the consciousness that others would find it easy to do. The reference to self comes out in recollected differences between classmates and myself, very pronounced in school and student days."

"Then reverted to the problem after thinking of the introspection involved. Just then the idea came, 'Well, we do want fewer men; hence multiply 15 by 6 and divide by 10.' In all these examples, there is a feeling that the answer must be easy or rather that the working out must be simple and that governs the method."

March 25. Problem

"Lost track of the 6 hens and thought only of 2 hens. Then thought it was one of those geometrical progression problems. Began to do this, but saw that the result would be in the hundreds which did not appear true to fact, though the premise was all right. Then simply began to add 2 eggs for each day and multiply by 6. The too great simplicity of the problem was unfavorable to getting the right approach. In mathematics, often approach the problem by what I expect."

"Self-reference as in above, colored with slight self-reproach and offset by thought of compensations to be grateful for."

Only one of Observer H's reports is included here, inasmuch as no one of this observer's reports contains a description of the self-experience.

OBSERVER H

March 13. Problem 23

"Fore-period: Usual general motor constraint, oculo motor constraint and vague fleeting mass of visual awareness of unanalyzable components."

"Mid-period: As E read, repeated the words in vocal motor fashion with concomitant concrete visual imagery of street, houses, etc.; vocal motor 'a square yard'—visual image of black square divided into thirds each way—vocal motor 'nine feet—square feet'—vocal motor 'how many feet?' 'Three—sixty'—(visual image of black square in nine sections kept fluctuating constantly with the vocal motor train of language). 'Three—sixty—nine into three sixty—four times'—visual image of 3.60 which visually was divided 9)3.60 and .40 stood out visually with immediate vocal motor response 'forty cents per square yard!' All of this followed through in a brief space of time and in quite an automatic fashion—the vocal motor imagery alternating smoothly, *i.e.*, with no inhibitive strains or confusions. But now as 'forty cents' was exclaimed again, caught visual image of the panorama of the street with a vocal motor incipient response of 'fifty feet' and 'how much a foot for the width of each lot—of each side—of—of?' Vocal motor kinaesthetic constraint arose concomitant with visual imagery of the front yards on each side and then of the pavement; with both, visual image of a '50' in midair and 'fifty' in vocal motor terms, vocal motor image of 'fifty—each side.' General constraint developed. The visual images moved more swiftly from pavement to the front yards. Frowns. Vocal motor exclamation of 'Why!' Spoke out, 'I don't know just what is meant!' There was blocking of vocal motor images, each alternating with the other, and each going round and round, with increasing periods of blankness in vocal verbal imagery and grey blankness of visual imagery involving a huge, generalized kinaesthetic constraint, with a visual image of 'my' face frowning. All this constituted the experience of bewilderment, confusion and lack of comprehension of how to go further with the problem. These images, incipient vocalizations and general constraints constituted the entire experimental data—nothing unique like a self-reference seemed to be present."

The descriptive data here presented, as well as the data from the two preceding groups of experiments will be criticised in a later section, together with data from the final group of experiments.

Criticism: The most important contribution of this group of experiments, aside from the descriptive data of the reports, is the increase in number of the self-experiences. The increased number of self-experiences occurring in the problem experiments seems attributable, judging from the introspective reports, not only to the comparatively greater difficulty involved in the task of solving a problem, but also in part to the social situation involved

for the observer in reporting the answer to the experimenter for a decision of accuracy or inaccuracy. A careful study of the introspective reports of the observers indicates that for Observer F, 54 per cent. of the self-experiences arising out of the problem experiments occurred not during the actual solution of the problem but immediately before or after giving the answer to the experimenter, or during the process of submitting an answer. The same is true for Observer M, in 21 per cent. of the self-experiences of this series. How far the social situation may be effective during the entire process of obtaining the answer, it is difficult to determine.

Inasmuch as Observers F, M, and R, were by this time quite familiar with the observational details of the self-experience, the experimenter asked from each of these observers a further descriptive report of the self in terms which should render as unmistakable as possible the interpretation to be laid upon the experiences of self, already set forth in the individual reports.

These generalized descriptions of the self-experience are quoted in full for each observer, because they are of great value in the interpretation of the descriptive data contained in the individual reports.

The descriptions are as follows:

OBSERVER F

"I can not tell whether what I have been referring to as 'I' is really something which is directly experienced or whether it is meaning. Usually it appears to be the latter. It usually comes as one aspect of a complicated consciousness, so bound up with a great mass of sensory content that it is impossible adequately to distinguish between them."

"When I say that such and such an experience involves self-reference, I mean that the experience carries the meaning of being uniquely personal—of being not the experience of Tom Smith, but of the individual who I am. There is nothing striking about this. I think no one seriously denies it."

"But when I speak of 'myself' as seeming to do certain things—of struggling, etc.—the case is somewhat different. Surely, taken on one level, one would say, 'Here is an entity of some kind, something unique and real and active.' So says common sense. In the light of my experience with this experiment, however, it seems far more probable that what I have denoted as 'I' is not a 'self,' but a consciousness of 'selfness'—perhaps a concept to

which certain experience is related—in other words, that 'I' is the meaning which has come to be attached to certain experiential processes."

"But this is guess work. I think that I experience self-reference and self-activity and, taken on an uncritical, unanalytical level, I certainly do; but the explanation of self as meaning is so reasonable that one has a tendency to consider the first as mere naïveté. It is for E to decide which way she wishes to look at the matter!"

OBSERVER M

"Self-reference to me consists in consciously bringing one's self into relation with the problem in question by bringing the two, problem and self, into attention at the same time. It consists of a definite effort in kinaesthetic terms with 'me' over and above all sensations; and gives a feeling to the observer of taking active interest in problem, which interest does not exist in passive attitude where ideas are not stirred up for a purpose and reviewed and discarded with that purpose in mind."

"'Me' is possibly a fusion of a certain bundle of qualitative and quantitative kinaesthetic sensations, consciously attended to as integration."

"'Me' is observational when I experience it as existing."

OBSERVER R

"Highest manifestation of reference to self, is the condensation of memories, judgments, complexes and mirror reflections, all occurring through different situations, unified under a verbal image—and especially of the differences which struck me as between this super complex and others, the accumulation of these differences. The self is a meaning carried in the verbal image, 'I,' 'me,' 'my,' and referring to all the foregoing. This meaning is more vivid in accordance with the greater or less intensity of the memory-complex, which in its turn is favored by emotional situations. I may have a bodily feel included with the other elements, but don't regard it as substantially necessary. While all the other elements are unified as a result of accumulation, the bodily feel varies so and is so devoid of meaning, that there is no possibility of permanent reference. The meaning involved here is mediated or marked by the imaginal kind of experience, not the sensory."

Observer H, having found nothing under the given experimental conditions, which he can characterize as an experience of self, submits the following statement of "what in my experience compares, I suspect, with the experiences in others which they call a self-reference." The report was written at the close of the experiment in which a solution of the following problem was called for. "If a brick weighs 3 lbs. and $\frac{1}{2}$ a brick, what will a brick and a half weigh?"

OBSERVER H

"The vortices of experiential 'Teilinhalte' precipitate into quite definite absolutes at various pattern levels—that is, a concrete visual image of a brick may stand as quite a structural unit at one level, and a vocal motor chain reflex of verbal phraseology, such as, 'three pounds and half a brick' may likewise function as a unit. Thus these units in temporal sequence make up the hop-skip-and-jump succession of experience. In the partial, not complete, unitariness of consciousness, one after the other of these modes of response becomes pro-tem the dynamogenic outlet. For 'me' (grammatically) there exists only this series of responsivenesses, one after the other. Sometimes one response breaks through in the midst of some other, either to the facilitation or inhibition of the other or inhibition of both. For example, as the vocal motor response, 'Three pounds and half a brick' progressed so far, suddenly a visual image of a red brick broken in half became predominant, and integral with this shift there was a heightened tension and adjustment in the ocular motor set with a sudden inhibitory laryngeal breathlessness, occurring in connection with the vocal motor incipient response. Then the vocal motor responsiveness just happened not to be checked, but moved onward in a sort of chain reflex fashion—'half a brick, three pounds, whole brick, six pounds!'"

"Thus one responsive set after another is touched off with all sorts of varying integrations occurring as the whole general Aufgabe, or gross, dominant responsive set, filters through the maze toward complete overt behavior."

"Now all there seems to be is just a kaleidoscopic series of blends and conflicts between a hugely various congregation of responsive sets. These responsive sets (the consciousness and the objective observableness being, perhaps, just the double aspect of internal and external relations, respectively) simply follow one another, or occur severally, for there seems to 'me' (grammatical) to be the possibility of several little consciousnesses simultaneously! This sequence also seems, just as a marble rolling through a maze, to follow a deterministic trial-and-error method, with the final goal constituted only of such completion of responsiveness between confluent responses, that they simply all become dissipated, with no inhibitory constraints or blocked-up responses still straining for overt expression. Just this storing of responsiveness constitutes the whole of experience. No reference to a unique or unanalyzable self has been observable at all."

"Certain situations, however, may seem more 'selfish.' For example, two major responses may block each other. A visual image may occur to which there comes no verbal counterpart. Then the reflexive outgoing of energy irradiates into a general somatic constraint. Frequently here the path of least resistance is an habitual one, very frequently a gestural and vocal motor language habit, such as shaking the head, scowling, and exclaiming incipiently, 'No, that's not right!' 'Now, let's see!'"

"Frequently, also, there occurs a visual image of the soma's own face, involving all the psychosis of one's having to stand before the gaze of one's

fellows. Thus really, there seems to be an illusion of a unique entity, a sort of ghost within."

Criticism: The reports of Observers F, M, and R, show essential agreement in the analysis of the self-experience, as fundamentally a meaning experience.

Observer F's report raises the question of the existentiality of meaning.

"I can not tell whether what I have been referring to as 'I' is really something which is directly experienced or whether it is meaning. . . . I think that I experience self-reference and self-activity, and taken on an uncritical, unanalytic level, I certainly do, but the explanation of self as meaning is so reasonable that one has a tendency to consider the first as mere naïveté. It is for E to decide which way she wishes to look at the matter."

If, however, we admit the obvious fact that meaning is present in consciousness and is reportable, is not the real problem at issue, not the question of the existentiality of meaning, but the question whether the acknowledged existentiality of meaning is of the same order as the existentiality of sensory content? The introspective reports of Observers F, M, and R, clearly show that when any experience of an organism or functioning structure is described with reference to its functioning aspect, meaning terminology is applicable and necessary. It is the necessity for consideration of this functioning aspect, if one is to deal adequately with experience, which seems to create a problem, inasmuch as the descriptive terminology applicable to the content aspect of experience is inadequate to a full description of the functioning aspect.

Since, therefore, the experimenter is called upon by Observer F to decide "which way she wishes to look at the matter," the experimenter in view of all the data collected in the course of this experimentation, decides that concrete experience, which is the only really observable experience, is always an integration of meaning with sensory content, and that this integration is existential. The term integration throughout this dissertation refers to that type of unification or organization of experience which may best be described as organic, and which is in varying degrees

the distinguishing characteristic of all organisms, or functioning structures. The expression "organic unity" would be synonymous with integration as here used.

The existentiality of meaning apart from sensory content, or of sensory content apart from meaning may with equal validity be called into question, since, as was pointed out in an earlier section of this investigation, both meaning and sensation are logical abstractions from experience, and are serviceable merely as classificatory terms, whenever for scientific purposes it is convenient to separate the functional or activity aspect from the content aspect of experience, in which, however, these two aspects really constitute an organic whole. If the experimenter's argument regarding the existentiality of meaning be accepted, Observer M's report of the self-experience is in entire accord with that of Observer F.

On March 19th, Observer M wrote in criticism of Observer F's description of the self-experience,

"I agree with the statement of the first paragraph, but can distinguish more than Observer F does. The experience seems more experiential to me but may be a vague meaning."

"The second paragraph is true—very personal note and my own unique experience."

"The third paragraph expresses a new idea but I expressed it in part when I said, 'holding problem and me' in consciousness at same time. This refers to 'me' as consciousness of self and less than an entity, 'me' as meaning attached to certain experiential processes."

"I agree with the last paragraph, but I experience self-reference and self working on problems, even if it is to consider the problem in a naïve way. At present it seems so, but the self-experience may of course really consist of meaning."

The chief difference between the reports of Observers F and M and that of Observer R lies in the fact that for this last observer the meaning aspect of the self-experience is integrated with the imaginal type of experience, rather than with the sensory type, as in the case of the first two observers. This difference, however, is of but secondary importance and will be referred to again in the section dealing primarily with the descriptive data of the reports.

Observer H's failure to report meanings, must be due either to the fact that they are entirely absent from his experience, or to this observer's conviction that meanings are not existential and so do not belong to the realm of psychological report. There are, however, even in this observer's reports, occasional references to meaning, as that contained in the last sentence of the following quotation from a report of March 13th.

"There was blocking of vocal motor images, each alternating with the other, and each going round and round, with increasing periods of blankness in vocal verbal imagery and grey blankness of visual imagery involving a huge, generalized kinaesthetic constraint, with a visual image of 'my' face frowning. All this constituted the experience of bewilderment, confusion and lack of comprehension of how to go further with the problem."

A still better example is to be found in the report last quoted.

"Frequently also there occurs a visual image of the soma's own face, involving all the psychosis of one's having to stand before the gaze of one's fellows. Thus really, there seems to be an illusion of a unique entity, a sort of ghost within."

The obvious conclusion to be drawn here is, therefore, that Observer H has neglected to report meanings, not that they do not occur in his experience.

The importance attributed to meaning in the self-configuration or consciousness will be referred to again in that section of the dissertation which deals primarily with the descriptive data contained in the introspective reports.

Experiments, Group VI

A final group of experiments was undertaken, in which the experimental conditions were precisely the same as for the preceding set of experiments, with the single exception that an experimental hour was arranged when all four observers could be present, and the problems were now read aloud to the group instead of being dictated individually. The observer first obtaining a solution of the problem was asked to give the answer orally, and time was then given to all the observers for introspection.

The group experiment was undertaken with the purpose of

discovering whether or not the presence of the other observers, with the competition thus introduced, would intensify or in any other way affect the nature and occurrence of the self-experience.

This final series included 80 experiments, 20 for each observer, in which Observers F and M reported a self-experience in 17 experiments, or 85 per cent. of the total number of the series, and Observers H and R reported no such experiences.

Throughout the first half of the series, the introspection was taken as soon as the correct answer had been obtained by any one of the four observers. In the second half of the series, each observer was asked to work out a complete solution of the problem, before beginning the introspective report. The answers were therefore not given orally in the later experiments. The observers throughout this series were asked to report only upon the experience of self. Ten problems were dictated during an experimental hour, and consequently the introspective reports are less complete than the earlier reports.

The following reports of Observers F and M have been selected as being representative for this series.

OBSERVER F

March 27. Problem

"Self-reference when I gave my answer and especially when E said it was not correct. The former situation involved hesitancy and was accompanied by several incipient tendencies to speak. The latter involved a tendency to withdraw and a feeling of self-consciousness and embarrassment—flushing, peculiar organics predominantly."

March 27. Problem

"Self-reference just before I said, '5 per cent.' and while saying it, a curious inhibition in the thorax—a temporary interruption of breathing which drew attention to myself, and constituted, I think, the core of the self-reference."

March 27. Problem

"Slight embarrassed hesitancy immediately preceding my saying, 'Forty-four.' It involved restriction in breathing, momentary tension of a different kind from that involved in solving the problem, and a very vague memorial reëxperience of embarrassment on previous occasion when I had been wrong. This all gave self-reference."

March 27. Problem

"While E was re-reading the problem, there was a sort of self-reference. It was involved in the thought that I was on the right track and would almost have solved it by the time E was through. There was an anticipatory bodily expansiveness, an actual, incipient 'spreading out' which I referred to the immediate future and which was identified as mine, and as meaning that I was going to feel that way."

April 1. Problem

"Several self-references, difficult now to identify, principally when I had given half the answer and E said to wait until I had it all. The experience was one of slight embarrassment coupled with assurance. These meanings were carried in part by somatic patterns which drew attention to myself and helped to constitute the self-reference."

OBSERVER M

March 27. Problem

"Verbal response. Conscious of self during problem, not as active agent, but merely as being existent and in attendance. Self did not do problem—it did itself."

March 27. Problem

"Self-reference, for 'me' did adding and was conscious of it, was active agent."

March 27. Problem

"'Me' did the work. Self-reference in keeping visual imagery of problem in my mind. When problems get harder, consciousness of self always comes, then actual reference to self as entity, agent of strained attention and activity."

March 27. Problem

"Self-conscious in being attentive and in presenting verbal imagery to someone. It was presented to my consciousness of self. 'Me,' the entity, was not involved."

April 1. Problem

"Self-reference in dividing up the number of books. It was 'me' who actively divided them up and was conscious of the results being personally realized."

Criticism: The reports obtained from this series indicate that for Observer F, the number of self-experiences is slightly diminished as a result of the presence of the group, showing a drop from 85 per cent. to 73 per cent., but the intensity of the experiences, according to the observer's own report, is somewhat

increased. The apparent decrease in number may however be due simply to the increased difficulty of introspection under the group conditions, as indicated by the following report of Observer F upon the differences observable between the group experience and the individual experience in solving problems.

OBSERVER F

"The differences are,

"1. Slightly increased embarrassment on being wrong, in the presence of the group.

"2. Greater difficulty in group experiment, in observing my experience, and considerably greater difficulty in reporting, *i.e.*, in introspecting adequately. I felt hurried—as though I were slighting the experience.

"3. I have a feeling that I did get better self-references in the group experiments, but that the difficulty of observing calmly and of introspecting adequately counteracts the frequency and intensity of the self-references."

The reports of Observer M show an increase of 13 per cent. in the number of self-experiences obtained in the group experiments over the number obtained in the individual experiments. This observer's report of the difference between the two methods of solving problems substantiates this conclusion.

OBSERVER M

"More kinaesthetic strain required to maintain attentive set in the group experiments, which involved self-reference more frequently as a consequence, since self-reference involves kinaesthesia to a greater or less degree. Consciousness of self is built up on kinaesthesia but is more also."

The failure of Observer R to report a self-experience in the group experiments is difficult to understand, inasmuch as the nature of the experience described in the reports seems identical with the type of experience characterized in the earlier reports as a self-experience. The following reports will serve to illustrate the point.

OBSERVER R

March 27. Problem

"Just had the first two numbers fixed. Groped about to see what's to be done. The fact that there were others in the room who could do the problem in a jiffy was a source of inhibition. Attitude: What's the use? Before I take the first step, it will be done."

March 27. Problem

"This seemed easy, but too many fractions to carry in mind, and easy to make a mistake accordingly. . . . No self-reference, though when I thought of others not getting it, I hoped I would get it."

April 1. Problem

"Didn't remember all the data. Slightly annoyed in the verbal form: 'Why don't we get the data before us?' More of an inhibition against asking again, when the others are about. Wonder how they could retain the details."

Observer R points out the following differences between the individual experiments in solving problems and the group experiments.

"Firstly, the task is less burdensome; the atmosphere more cheerful which is a help. In my own case, there is inhibition because I know that the others will get the answer sooner. There is curiously no self-reference here, as there is greater effort to get the answer due to group incentive."

Observer H is thoroughly consistent in reporting no experience of self in the group experiments, though he refers rather frequently in this series to "visual imagery of own face and of faces of others," and admits a self-reference in language terms, as, for example, "A vocal motor, 'Let's see.' Only in these language terms do I get a 'self-reference.'"

The essential difference between the group experiments and the individual experiments in solving problems, is the following, according to Observer H's account.

"In the group experiments, more inner general constraint (speed Aufgabe) visual imagery of others' faces, and constraint like closing eyes, with heightened vocal motor constraint of Aufgabe to speak out the answer quickly, a tendency to speak as soon as the stimulus is given. This heightened vocal motor strain overbalanced the fine rapport between visual and vocal imagery. Hence a blocking, occasioning an even greater confusion with a 'self' as against the 'others,' due only to the visual images of the others and to auditory imagery of others' voices speaking out quickly, i.e., in synaesthetic fusion with my own kinaesthesia of time Aufgabe."

It is obvious that although Observer H still finds no experience of self, "he is growing warmer," to use a colloquial expression. The incompleteness of a description of experience which notes only its structural elements is particularly con-

spicuous in the attempt to describe "others." Can any one seriously maintain, outside a psychological experiment, that one's experience of "another" is adequately described by a visual image of that other, plus an auditory image of that other's voice?

Apparently little observable difference in experience was occasioned by asking the observers to work through the problem, noting the answer in the introspective report, instead of giving it orally. Observer F comments in this connection, "Little difference."

Observer H attributes to the former condition, "perhaps a little less visual imagery of other observers and a little less general constraint of a speed Aufgabe—nothing uniquely different, however." Observer M notes, "More distraction under condition of giving answer orally. There was not so much kin-aesthetic urge, or need for active agent as 'me' to work under the later conditions, and more time for consciousness of self."

Observer R finds no difference in the new method of giving the answer, "except that I was aware that I could now work out the problem myself, and felt a little satisfied at that."

In addition to the actual descriptive data contained in this last group of reports, we have then some evidence that the self-experience is accentuated through group experimentation.

CRITICAL SURVEY OF INTROSPECTIVE REPORTS

Let us turn then to a consideration of the self-experience itself, as we find it set forth in the introspective reports of the three observers, who have given descriptions of this type of experience.

Observer F has contributed out of a total of 74 experiments 59 reports of the self-experience; Observer M out of a total of 96 experiments, 67 reports of the experience of self; and Observer R, out of a total of 99 experiments, 14 reports of the experience of self. In other words, Observer F has reported an experience of self in 80 per cent. of the experiments undertaken, Observer M in 70 per cent., and Observer R in 14 per cent.

In order that the effect of practice may be evident in the analysis of the self-experience into its component parts, the introspective reports of each observer will be divided into three groups following the order of experimentation already described, the first group containing reports of the choice and recognition experiments, the second group containing reports of the problems solved individually, and the third group containing reports of the problems solved in the presence of the other observers.

The following table will summarize for Observer F the general structure or pattern of the self-experience, indicating in percentages, the number of times a given component occurs in the reports included in each of the three groups.

<i>Observer F</i>			
	Group I (14 reports)	Group II (28 reports)	Group III (17 reports)
Meaning	92%	100%	100%
Organics	14	64	82
Kinaesthesia	29	61	82
Attitude	57	14	12
Imagery	{ verbal .05	..	.04
	{ visual .05	..	.04

Interpretation of Table

The component most characteristic of the self-experience is obviously meaning. The experimenter has classified as meanings such statements of Observer F as the following.

December 13

"I was conscious of myself in the sense of realizing that I had experienced a similar situation before and that I was reacting to it in a similar manner. And when I thought, 'I may as well choose one as another,' I thought of myself in the sense that I had no preference and that my choice would have no consequences for myself."

December 18

"I was at times conscious that 'I' must make this selection; that there was an obligation on my part. This was not definitely formulated, but this feeling that 'I' was responsible for getting this done came to me on two or three occasions."

February 12

"But there was something which meant 'I,'—beyond the sub-vocal saying of 'I.'"

The following examples illustrate the type of observational experience defined in the foregoing tables as attitude.

December 20

"I was conscious of my self in setting the task to be done during the expiration of the breath. . . . I was somehow vaguely conscious of myself all during the act of choice—in the sense of self-effort—that it was 'I' who was making the choice."

January 15

"The feeling of responsibility, desire to maintain self-respect, etc., involved self-reference."

January 22

"I was acutely conscious of 'my' inability to recognize the design, I felt balked, etc.; there was certainly a kind of self-reference, but I can't get at it."

It will be readily seen that the distinction between meaning and attitude is difficult to define with exactness. A study of the reports as a whole seems to indicate that attitude in the sense employed by the experimenter is a term applicable in some degree to the description both of structure and of function, and is as such

made use of by all three observers in describing experience which has not been analyzed to the logical limits either of structure alone or of meaning alone and which consequently includes aspects of both. The nature of the above classification would obviously not be greatly altered, were no attempt made by the experimenter to maintain this distinction. In the two instances, or 6 per cent. of cases noted in Group I, in which meaning is not reported as a component part of the self-experience, attitude, as just defined, is so reported.

The foregoing classification emphasizes certain other important facts, in addition to the importance attributed to meaning as a component part of the self-experience, namely, the fact that as the observer becomes more practiced in analysis of the experience introspected, the sensory content, which was of less immediate observational importance than the meaning aspect of the experience, is more frequently reported. Thus organic sensation which is reported as a component part of the pattern of self-consciousness in but 14 per cent. of the experiments included in Group I is reported in 64 per cent. of the experiments of Group II, and in 82 per cent. of the experiments of Group III. Similarly, the report of kinaesthetic components increased from 29 per cent. in Group I, through 61 per cent. in Group II, to 82 per cent. in Group III. It is interesting to note that the type of descriptive detail, which has already been designated as attitude, has decreased from 57 per cent. in Group I to 12 per cent. in Group III, indicating that the total experience has, through practice in introspection, been more successfully differentiated with respect to its meaning and content aspects, but it is important to note that the meaning aspect is of primary importance throughout.

Inasmuch as the reports of imagery of various types, chiefly verbal and visual, are of such infrequent occurrence with this observer, it seems reasonable to conclude that they form an incidental, rather than an integral or necessary part of the pattern of experience which may be described as consciousness of self.

Finally, the table indicates, when taken as a whole, that consciousness of self for Observer F is usually an integration of meaning, of kinaesthetic, and of organic sensations.

This threefold integration is found in 49 per cent. of all the self-experiences of this observer and in 71 per cent. of those included in Group III. An integration of either meaning and kinaesthetic sensation, or of meaning and organic sensation is found in 68 per cent. of all the self-experiences of Observer F and in 94 per cent. of the experiences included in Group III.

When we turn to the reports of Observer M, we find an apparently greater difficulty in the interpretation of data, arising from the fact that there is more descriptive emphasis upon attitude. Constant reference is made in the reports of this observer to the feeling of compulsion, the feeling of obligation, the feeling of activity or of thwarted or blocked activity. The difficulty, however, is more apparent than real, for it has been already pointed out that the description of attitude represents a form of analysis which retains descriptive terms applicable both to the functioning or meaning aspect of consciousness and to its sensory content, representing a stage of analysis in which neither aspect is analyzed to its logical limit.

The following table will summarize for Observer M the configuration of the self-experience. The reports of this observer are also divided into three groups, the first representing the self-experience as determined by the choice and recognition experiments, the second by the individual problem experiments and the third by the group problem experiments.

<i>Observer M</i>			
	Group I (16 reports)	Group II (33 reports)	Group III (17 reports)
Meaning	..	.03%	..
Organics	13%
Kinaesthesia	94	82	88%
Attitude	100	97	100
Imagery	{ verbal .06	.06	..
	{ visual ..	.09	.06

Interpretation of Table

The important fact to be noted here is again the importance given to the meaning aspect of the self-experience, although the report emphasizes attitude rather than meaning. The same incompleteness of analysis which is responsible for the failure to discriminate meaning from attitude is shown in the failure to discriminate the organic sensations from the kinaesthetic. Nevertheless, Observer M's description of the self-experience closely resembles that of Observer F in the value it attaches to that aspect of the experience, which can be described only in meaning terms, in the description of the self-experience as an integration of meaning with somatic sensation, and in the incidental nature of imagery as a component of the total pattern. The integration of meaning with organic or kinaesthetic sensation is reported in 81 per cent. of all of Observer M's descriptions of the self-experience and in 88 per cent. of the descriptions included in Group III, as compared with 68 per cent. and 94 per cent. in the corresponding classifications of Observer F's reports.

A similar analysis of the descriptive data contained in Observer R's reports of the self-experience, may be summarized as follows, but inasmuch as Observer R reported no experiences of self in the group experiments in solving problems, the following table includes only Groups I and II.

<i>Observer R</i>		
	Group I (3 reports)	Group II (11 reports)
Meaning	100%	82%
Organics
Kinaesthesia
Attitude	..	18
Imagery	{ verbal	18
	{ visual	82

Interpretation of Table

Observer R's description of the self-experience resembles that of the two other observers in that meaning is again the most

important component of the experience. The striking difference in description is the importance attributed to imagery of different kinds, in contrast to the reports of Observers F and M in which somatic sensations were emphasized as important aspects of the total pattern of self-consciousness.

The conclusion to be drawn from this difference is apparently the fact that meaning is the one essential aspect of the self-experience, but that when such an experience is analyzed from the point of view of content, the sensory detail, which then becomes observable, may be variously distributed within the total pattern.

The fact that meaning is the essential characteristic of the self-experience is further substantiated by the fact that Observer H, who has reported no meanings, except in terms of kinaesthetic complexes, is the only observer who has failed to report a self-experience.

Results

Configuration of Self-Experience

The conclusion to be drawn from the descriptive data contained in the reports of Observers F, M, and R, is, therefore, that the self-experience is not a simple, unanalyzable experience but a complex integration of the perceptual type, an integration of sensation with meaning, of image with meaning or of both sensation and image with meaning, whose characteristic feature is meaning. When sensations or images or both are logically organized with reference to the past or total activity of an organism, and when this logical organization is in the focus of attention together with sensations and images, we have a pattern of consciousness which may be described as a consciousness of self. Meaning throughout these reports is described as an experiential, observational factor of the total pattern.

The accompanying table presents a chart showing for each observer the distribution of self-experiences throughout the course of experimentation.

Distribution of the Self-Experience

The following facts regarding the distribution of the self-experience are deducible from this chart.

I. No one observer is at all times self-conscious, the reports of consciousness of self varying from 80 per cent. of the experiments undertaken in the case of Observer F through 67 per cent. in the case of Observer M, 14 per cent. in the case of Observer R, to 0 per cent. in the case of Observer H.

II. There are obvious and striking differences among the different observers in the extent to which consciousness is integrated into patterns exhibiting the self-configuration, depending primarily upon the degree of organization of experience with reference to the total activity of the organism, and secondarily upon the freedom and completeness of introspective report.

III. Consciousness of self is characteristic of different experiences in different degrees, the recognition experiments contributing the smallest number of self-experiences for each observer, the choice experiments a greater number and the problem experiments the greatest number, although, as has already been pointed out in an earlier section, there is some variation from this order in the series of group-problem experiments, as indicated in the accompanying table.

	Recognition	Choice	Individual Problems	Group Problems
Frazier	36%	77%	93%	85% (more vivid)
Murphy	40	63	70	85
Roback	10	14	20	..

IV. There is some evidence that the increased number of self-experiences in the problem experiments is due to the introduction of a social factor in the experimental situation, and that when this factor is further strengthened through group experimentation, the self-experience is thereby to some extent accentuated.

CONCLUSION

(1) In answer then to the problem which was the chief object of investigation in this dissertation, namely, whether there is an immediate, unanalyzable experience of self in Miss Calkins's sense of the term "self," which is observable to introspection, it must be granted that there is an immediate experience of self observable to introspection, which is analyzable into meaning, imaginal and sensory components, which are, however, integrated in concrete experience in a unitary existential whole. Whenever, to repeat what has already been said, sensations or images or both are logically organized with reference to the past or total activity of an organism, and when this logical organization is in the focus of attention together with sensations and images, we have a pattern or configuration of consciousness which may be described as a consciousness of self.

(2) The descriptive terms most frequently used by Miss Calkins in her characterization of the self as "persistent," "unique," "fundamental or basal to its experiences," and "related to its environment" are not the terms in which the observers in this experiment have characterized the self-experience. The experience is throughout this dissertation consistently described in terms of a meaning-sensory-imaginal complex of the perceptual order or type.

(3) Consciousness of self is not present in all experience, but an introspective determination toward the observation of experience from the point of view of the concrete whole, rather than of the part, favors the occurrence of the self-experience. There is some evidence also that the "social factor" in a situation to some degree determines the experience of self.

Finally, the consciousness of self accompanies experience of different kinds with different degrees of frequency. Among the types of experience investigated in this dissertation, the self-experience occurs more readily in the problem experiment than in the choice experiment, and more frequently in the choice experiment than in the recognition experiment.

